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SICILIAN BUTTERCUP NUMBER.



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FEB.
1914

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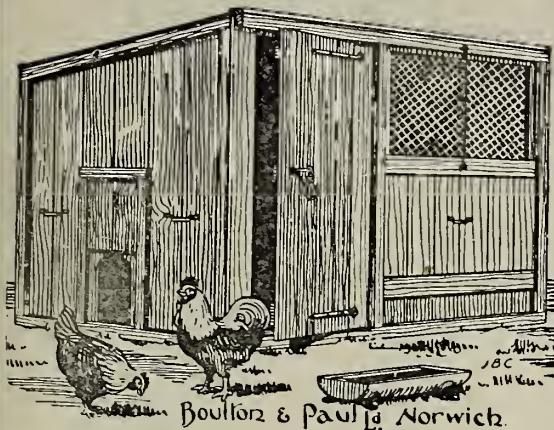
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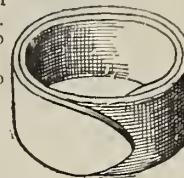
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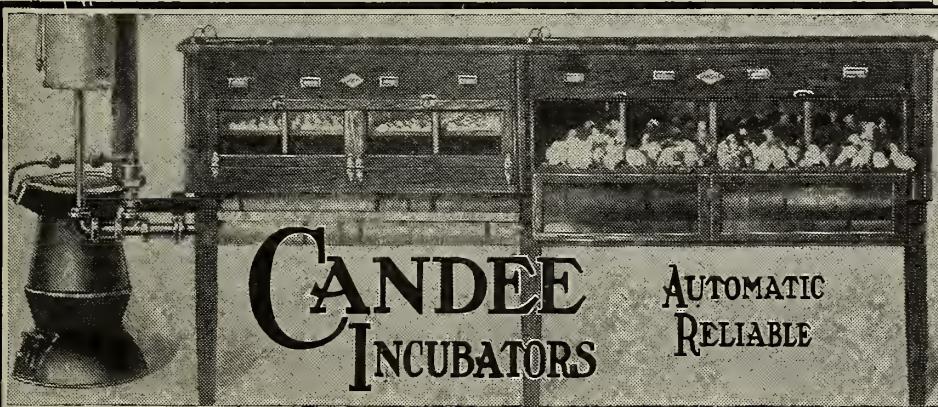
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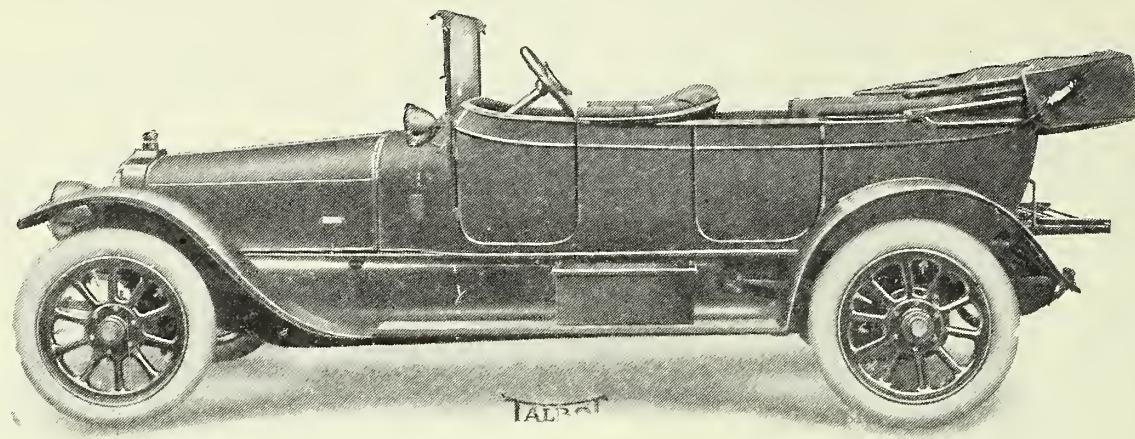
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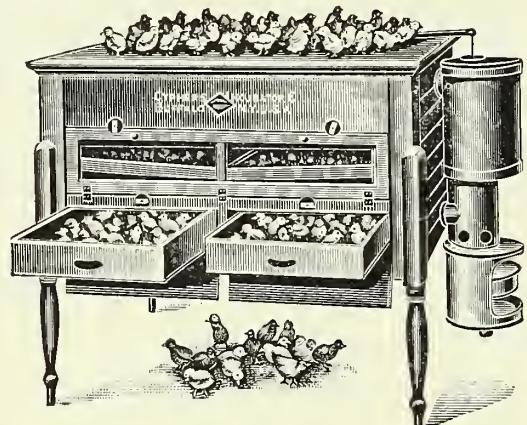
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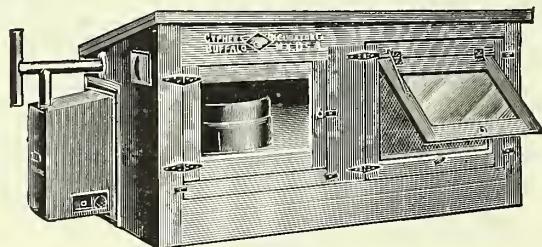
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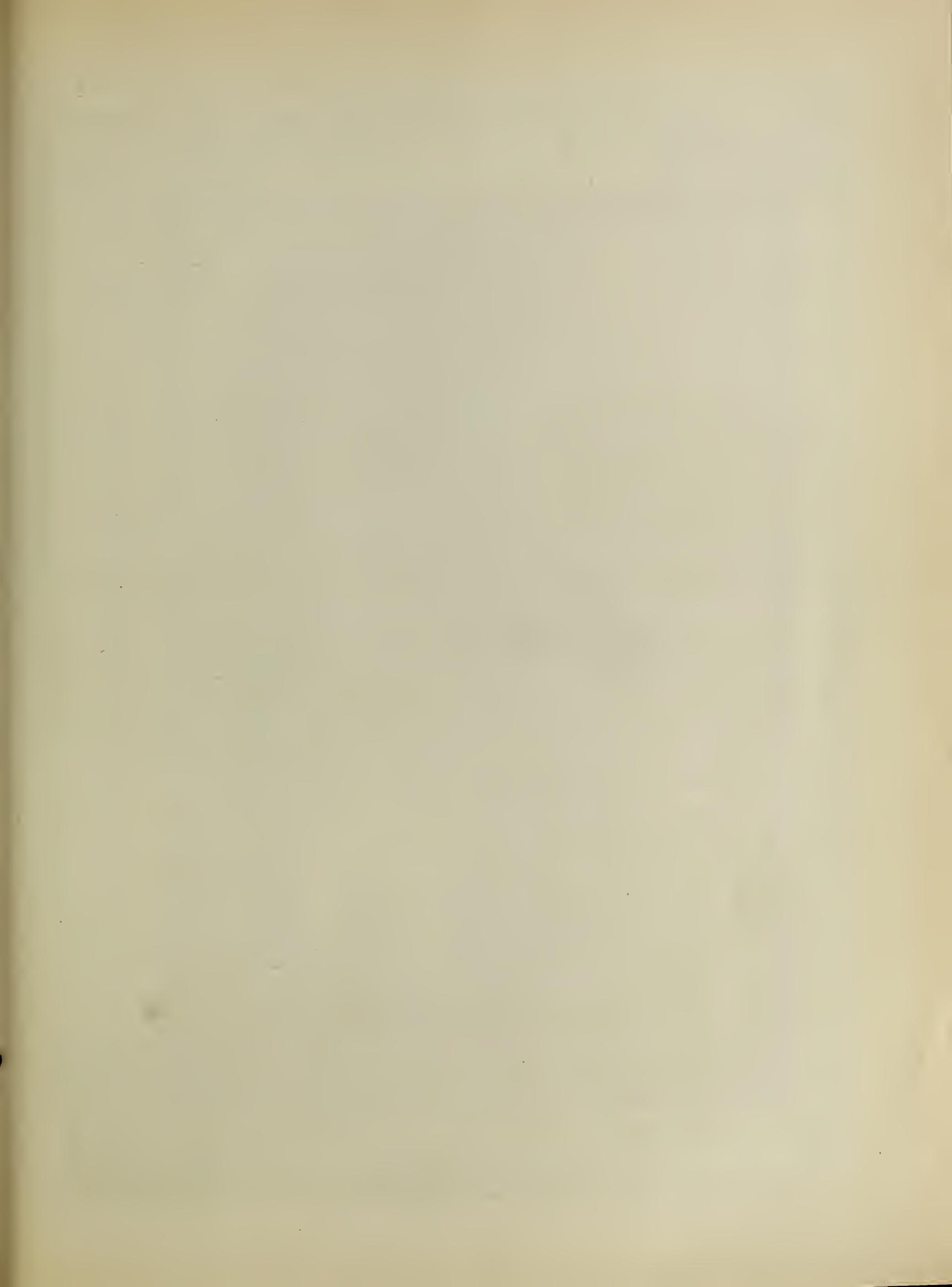
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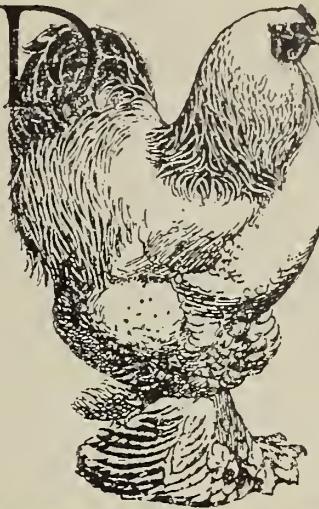
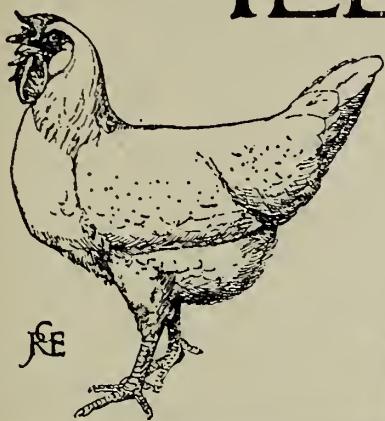


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TYPICAL SICILIAN BUTTERCUPS.

A new variety of which many interesting particulars are given in this issue.

THE ILLUSTRATED POULTRY RECORD



Vol. VI.—No. 5.

February 2, 1914.

Monthly, Price Sixpence.

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The Editor would like to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered by experts in the several departments. The desire is to help those who are in difficulty regarding the management of their poultry, and accordingly no charge for answering such queries is made.

The Annual subscription to the ILLUSTRATED POULTRY RECORD at home and abroad is 8s., including postage, except to Canada, in which case it is 7s. Cheques and P.O.O.'s should be made payable to the ILLUSTRATED POULTRY RECORD.

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The latest date for receiving advertisements is the 20th of the month preceding date of issue.

The utmost care is exercised to exclude all advertisements of a doubtful character. If any reader has substantial grounds for complaint against an advertiser he is requested to communicate at once with the Editor.

England from Europe via America.

We are always glad to give credit where it is due, and, therefore, we must confess that the introduction of the Sicilian Buttercup into this country is another feather in the cap of our American cousins. There are numerous instances of the States having found a good breed, and, after perfecting it to a degree and fixing its special characteristics, introducing it to the notice of British farmers and utility poultry keepers. Some finds have been excellent, others not quite so good, but in every case the breeds thus brought to our notice have been described as the last word in perfection. We always expect to have to use a fair quantity of salt when swallowing the laudatory statements made by American breeders, hence though Buttercups may be a coming breed we do not think their qualities—external and internal—justify all that has been said in their favour. Of other breeds that have arrived here via America we may mention the Leghorn, Ancona and Brahma, and among ducks the Pekin. The American does show initiative, a virtue that we might well adopt in this country.

1913 and its Record.

The annual review which we publish *in extenso* this month, apart from the interesting figures as to imports of eggs and poultry, renders considerable service in emphasising the necessity for increase of production. In spite of the fact that over-seas supplies of both these products have made a very considerable advance in volume, the demand has been greater than ever, with the result that prices of home supplies during the past months, as in fact all the year, have attained their maximum. That however, is

by no means peculiar to this country, as it is the same everywhere. In the United States six cents (3d.) eggs have been common. Such does not mean so much as it seems, for the purchasing power of the cent is much less than that of our half-penny, although nominally of the same value. European eggs and poultry are being shipped to the United States, and when the revised tariff is fully effective it may be that there will be a very heavy increase in that trade, the result of which may probably change the entire aspect of affairs, by deviation of supplies which heretofore have found their way to this country. Some there are who may think that would be desirable. If home producers fill the void thus created no harm would be done, failing which there must be either a further rise in prices or a big reduction of consumption. In fact, the latter would assuredly follow the former. Ultimately that would be to the injury of poultrymen themselves. It is evident from what is here stated that the prospects of the industry are brighter than ever known before. What has now to be done is to extend it all over the country to meet the altered conditions, present and prospective.

A Phenomenal Year.

Such is the term applied to 1913 by Mr. Edward Brown, F.I.S., in his Annual Survey which we publish in the present issue. When the import figures are studied that, will be accepted as a correct designation. Few of those interested in this question ever anticipated that the foreign and colonial imports would attain such dimensions, and that the time would arrive when we should pay foreign countries, (for in this direction the colonies are a negligible factor) upwards of ten and a half million pounds sterling in any one year for eggs and poultry. Yet such was the case in the twelve months just ended. If to these we add the Irish supplies the bill for these two products which Great Britain paid last year beyond such as were native, was nearly £14,500,000, or more than 7s. per head of the population even at wholesale values, for if retail prices were calculated at least £2,000,000 would have to be added to the total named. The surprising fact which is here brought out is that although quantities of eggs and poultry have increased there has been no check to advance in prices, as might have been anticipated. Even Russian eggs show a further rise, though that country sent us nearly 15,000 tons more eggs than in 1912. The fact is that Russia bulks most largely in this trade, and together with Denmark accounts practically for all the increases of recent years. Probably one explanation why supplies have come in such greater quantities is that trade has been good in Britain and

comparatively poor in Europe, so that demand and prices have advanced more rapidly here than on the continent. How long that will continue no one can tell.

American Influence.

One puzzling factor is that so large an increase has been made in the shipments of poultry to this country from the United States of America, thus regaining a large part of the decline in previous years as compared with seven years previously. A jump up of £130,000 in a single year is remarkable, together with a large advance in values. The quality of the birds brought over the Atlantic has been very good, and they have been received with considerable favour in the hotel and restaurant trade. Ninepence per pound is an excellent return for cold stored fowls. What the future has to reveal no one can tell. Reduction of the tariff walls of the United States may mean a complete change. Already Russian eggs have been shipped from Hamburg to American ports, and if this trade assumes large dimensions, many of the supplies which now come to Britain from Eastern and Southern Europe as well as Northern may be deviated. More than ever is it evident that the time has arrived when greater efforts should be put forth to develop the resources in poultry and egg production in our own country.

Combating a Trust.

Everyone engaged in production desires to obtain as good a price as possible, which is right and reasonable. The complexity, however, of our present-day civilisation lends itself to exaltation of retail prices without those who produce the supplies realising the full benefit, unless and until steps are taken to place this question on a right basis. Such may be taken by either party to the transaction, that is by combination on co-operative lines of farmers and others, and on the other by consumers. We hear in these days much as to the former. The latter have not taken their fair share in the work. A Canadian report tells of a very effective action at Toronto just prior to Christmas in relation to turkeys. The dealers had formed a trust and announced that the price would be from 1s. 3d. to 1s. 5½d. per lb., which was a considerable rise on the previous year. An association called the Housewives' League dealt with the question in a very practical fashion, buying two tons of turkeys direct from farmers for its members, which they were able to sell at 1½d. per lb., without in any way cutting the price obtained by the rearers. The consequence was the merchants had to bring down their rate to the old standard, for if such a system were generally adopted their function would be gone.

The Agricultural Organisation Society.

The month of January, 1914, has, in respect to the poultry industry, had surprises which have awakened a large amount of discussion. The first which we were able to announce last month, was that the project for the establishment of a National Poultry Institute had been abandoned because of the refusal of the Development Commissioners to revise the conditions of the grant offered from the fund at their disposal. The second, which was of an even more startling nature, made public the fact that Mr. Edward Brown, F.L.S., who was one of the founders and for nearly fourteen years Secretary of the National Poultry Organisation Society, the merging of which with the Agricultural Organisation Society has only recently been announced, has resigned the position of Poultry Expert to and Secretary of the Egg and Poultry Committee of the last named body, such resignation to take effect in March next. It may be explained that Mr. Brown has been Poultry Expert to the A.O.S. for four and a half years, and that he has acted in the second capacity since April 1913, when the Society was reconstituted.

A Chance for Fox Hunters.

Reports have been published that the fox-ranching industry in Prince Edward Island is assuming very large dimensions, and that considerable profits are being made by the companies interested. Dividends have been declared of from 20 to 900 per cent, and there are a hundred and twenty companies engaged in the business. The silver fox is bred for the sake of its skin and fur. If the various Hunts in this country could be transferred to Prince Edward Island they could probably get much better sport than at home, and if they invested their money in the companies referred to, perhaps they might be willing, as it is not a question of inability, to pay claims for the depredations of their pet vermin. Devoutly the majority of poultry-keepers will wish that such a transference should be made. We can promise huntsmen to organise a demonstration to give a brilliant farewell to any liner carrying hunts and hounds to other climes.

Risks of Sterilization.

Mr. Robert Mond, who is well known as a poultry breeder, has recently been giving to a representative of *The Times* views respecting the use of sterilised and condensed milk which, coming as they do from a skilled scientist, demand attention. To put his observations briefly, he claims that milk from tubercular cows is not harmful to human beings and, on the other hand, that sterilised or condensed milk is a danger to children fed upon it and definitely predisposes them to tubercular infection, giving records of experiments actually

made by him. Such an opinion raises important questions as to other classes of foods. Fortunately eggs are less susceptible to external influences by reason of the shell. At the same time as a result of treatment for preservation changes do take place, more especially if the period of retention is prolonged. Upon this whole question our knowledge is superficial in the extreme. Some observations have been made as to the effect of cold storage upon eggs, revealing the fact that the moulds and bacteria developed at low temperatures are harmful to the egg itself and conducive to rapid deterioration. Further, it has been shown that eggs kept for a prolonged period in water-glass acquire a strong flavour, though not distinguishable if the time be comparatively short. So far as we are aware the lime water method is innocuous. It would be of interest to learn what is the effect of the newer systems of sterilisation adopted by some importers of foreign eggs. So far as poultry is concerned the only system in vogue is that of chilling or freezing, respecting which there is much to learn. In both directions the imperative need is that careful and exhaustive investigations should be made. It is all to the interest of home producers that the line of safety is to use new-laid eggs and freshly killed poultry.

The Electrical Treatment of Chickens.

We publish elsewhere in this issue a quotation from the *Journal of the Royal Society of Arts* giving an excerpt from a paper read by Mr T. Thorne Baker before the Society of Arts, on the subject of treating chickens electrically during the earlier stages of their growth. Although not in any way detracting from the value of this contribution to poultry literature, we feel there are certain points to which reference should be made. In the first place Mr. Baker speaks of "petits poussins" as being about twelve weeks old and weighing a few ounces. This is not the case. The chickens to which this name is given weigh from eight to twelve ounces and are from six to eight weeks old at the time they are marketed. It is stated, in the paper under review, that the experiments in which electricity was used showed that such birds could be got ready for market at five weeks. We would refer readers to another article in this issue on the growth of chickens, for there it is stated that chickens under certain conditions can be reared to a weight of well over three pounds in twelve weeks. In face of these facts it is not surprising that birds can be grown to "petits poussins" size in five weeks, although it must be confessed that this is a case of rapid increase. It would be interesting to know what effect—whether beneficial or otherwise—results from rearing birds on the "flat" system.

THE SICILIAN BUTTERCUP.

DR. G. C. ANDERSON'S OPINION.

ALTHOUGH Sicilian Buttercups were only introduced into this country in 1912, they already bid fair to become one of the most popular fancies, as evidenced by the splendid entry secured for the recent Crystal Palace Show.

It is not surprising that they have caught on considering the excellent all-round qualities of the breed. First and foremost, they are splendid layers, the eggs having beautifully firm white shells. Such excellent layers are they, that the Buttercup will soon prove to be one of the most prolific layers we have, both summer and winter. As a very keen advocate of the intensive system of keeping poultry, I have no hesitation in saying that the Buttercup will eventually come to be looked upon as the fowl "par excellence" for this particular method. The bird is keen, active, and alert, always on the scratch, stands confinement well, the eggs producing strong healthy chicks which mature early.

As a table fowl the Buttercup is superior to all other light varieties.

The birds, both male and female present a most attractive appearance and can be reckoned the prettiest birds to-day. The male with his stately carriage, shapely comb, willow green shanks, dark red plumage, and long black tail, and the female with her neat and trim shape, cup shaped comb, willow green legs, and plumage of rich buff and yellow with black bars. As an exhibition fowl, the colour scheme and type of comb strongly appeal to the fancier. The buff colour of the female should be of a rich golden shade on the neck with a total absence of ticking or mottling, the breast should show a lighter shade, while at the same time it should be of a plain colour. The back should be a golden buff, the individual feathers of which should be barred, *i.e.* several black bars should run across the feathers giving the back a mottled appearance. The tail and wing flights should be black and reddish brown, while the under colour should be clouded on the back and sides with shades of grey.

The surface colour of the male should be a brilliant red, not too dark in shade, however, thus avoiding the deep colour of the Rhode Island Red. The abundant glossy neck hackle of the bird should not show a lighter shade than that which appears on the lead. The main tail feathers and sickles should be black becoming red as they approach the saddle. The under colour should be the same as in the female. The shape of the comb in both male and female should be concave or cup shaped, single as it leaves the back, then spreading out into a low circle surmounted with numerous erect spikes.

The serration should be perfectly even and well defined. In the female all tendency to the lop-comb of the Leghorn should be avoided. The more petal points in the comb of the male or female the more attractive the appearance.

One of the main characteristics of the fowl is the willow-green colour of the shanks; any other colour, such as greyish blue or greyish yellow, should immediately disqualify a bird.

Buttercups have undoubtedly come to stay. They have a very fine disposition, are most friendly, are small eaters and excellent foragers. My advice to all who do not know the breed is to take up this most fascinating variety either as a utility or exhibition fowl.

ERNEST GEO. WIPPELL'S VIEWS.

Poultry Artist and Judge.

THE shout of praise was loud at the debut of Buttercups, and the talk of their laying powers rather amazing, but that was no incentive, to my liking, for this latest importation. It was the chicks themselves that first claimed my admiration. The prettiest little chicks that eyes ever beheld:—Yellow, with black and brown markings, green legs, and as lively as crickets; lovely enough to compel anyone to take up the breed. Next a visit to the parent birds! Their appearance did not charm me quite so much as the chicks, but, having an eye for colour, I could see at once the possibilities of a very handsome exhibition bird. The cock, a bright lustrous red; black tail, with beetle-green sheen, and willow-green legs. The hen, a golden buff, with black mottled markings on back and wings; black tail and wing flights; legs, also, of a willow-green. What better combination of colour could one wish for?

Having had the honour of being elected judge at the first Sicilian Buttercup Club show, the Editor of this journal has asked me to write on their exhibition and utility points. Of the 81 birds shown at the Crystal Palace the type with very few exceptions was well maintained. A gamey, alert and business-like lot! As the cocks resemble the Rhode Island Red in colour, it is very important that their characteristic type should be strictly adhered to and not approach the squareness of the Rhode Island Red. As a matter of fact there is nothing resembling this or any other breed in the hens. They are quite new^{in colouring} to the poultry world. Unfortunately, at present, the hens vary in colour and markings, though that is fortunate for the amateur. Both professional breeder and amateur will have equal chance in breeding a bird to standard, which says:—Neck hackle, golden buff; Back, golden buff, mottled with black;

Breast, a lighter shade of buff. Surely the temptation to breed such a bird is great. The Cup and second prize birds were nearest to standard for colouring, but, like many others, the mottling on saddle was poor, and the colour of body and breast was not exactly the shades of buff required. Most of the best mottled hens were too light in ground colour; and the mottling ran into the breast, which should not be.

The head-points, although most important, have been left to the last. The standard says: Comb, cup-shaped, with numerous points or serrations. Only one bird in the show, a cock, can claim to really

As a utility breed it has everything to recommend it and is, in every sense of the word what a utility poultry fancier calls a business-like fowl. Always foraging about, getting its own living, not forgetting to leave a large white egg in the nest before going out in the morning. The Americans call them egg machines, because they have proved themselves such good layers. They have done much, already, to establish as good a reputation on English soil. For the table they are small, but being of a gamey build, carry a plump breast and the meat is of fine quality. The Buttercup is booming in England because it has won a repu-



A Sicilian Buttercup Hen belonging to the President of the American Buttercup Club. [Copyright.]

have a cup-shaped comb, and this bird won 1st prize for best combed bird in show. At present both American and English Sicilian Buttercup clubs are drawing up an ideal comb for future use, for breeding to, so too much must not be said on that matter. One thing is certain, the comb must be cup-shaped.

Another important point has to be settled, the colour of ear lobes. At present the standard says red and white. Being a Mediterranean breed, the tendency is to white. Many of the birds had but little red in the lobes at the Show. The American Sicilian Buttercup Club propose entirely white ear-lobes, which makes a prettier contrast than red and white to the comb.

tation in America, which no fowl can do unless it has exhibition and utility points combined. Much has been written of them, but in the future they will speak for themselves.

CAPTAIN STANTON'S EXPERIENCE.

It is a little over a year now since the pen of Sicilian Buttercups imported by Miss B. Stanton from Mr. Dewey, President of the American Buttercup Club, were first introduced to the public of this country at the Birmingham Show. Since then, their popularity has increased by leaps and bounds till they promise to become quite as popular here as they have in the United States. The Buttercup

classes at the recent Crystal Palace Show produced an entry of 81 exhibits, and the brisk demand for birds and eggs for utility and exhibition purposes shows that a demand has already been created. It was their splendid laying qualities that first attracted the attention of American fanciers, and there is no doubt that they really are good in this respect, producing average sized white eggs and plenty of them.

Though small in size they are useful birds for the table as they are very plump, carrying a good quantity of breast meat and possessing small bones; but unless fashion alters, their green legs will prevent them from taking a leading place on the market as such. They are splendid foragers and are always busily engaged scratching about in their runs, and they require less food than most other breeds, and though broodiness is not unknown they do not often evince the desire to sit, and when they do, are easily discouraged.

Have they any disadvantages as general utility fowls? As a breeder I suppose I should be dumb on this point, but personally, the only fault I have to find with them is that they fly! I cannot, like one breeder in the U.S.A., claim that they can easily be penned by 3 foot wire, as my own experience is, that the pullets, if not satisfied with their surroundings, will take a 6ft. fence without looking at it. On the other hand it is only fair to state that this flighty nature is only apparent in individuals.

Most people admire the Buttercups, they are such dainty little birds and the rich red of the cock birds is a very pleasing contrast to the pretty

mottled yellow of the hens. There is also something very taking in their quaint chattering note, which is quite unlike the sounds produced by other breeds.

A great deal has been written and said about their origin, and their peculiarities in comb and feather have been attributed to almost every breed under the sun. But the true Buttercups are essentially thoroughbreds, and anyone with any experience of them can readily see that they are not the manufactured variety some people would have them to be. The "Flower Birds" as they are called in their native land have been the breed of the island of Sicily for centuries and are still almost universally bred in that country. I have seen some letters in the press complaining of the extraordinary varieties a sitting of Buttercup eggs will produce. But this is certainly not so if reliable stock birds are used as breeders. There are certainly light and dark males and, while the former are no good for exhibition purposes they are extremely attractive birds. As for the pullets, I do not find that they vary very much, though a certain number come much browner than they should, and the mottling is not always as distinct as might be desired. Compared with other breeds I am quite satisfied that the percentage of Standard birds bred from reliable stock, will be favourable.

I think the Buttercups have a great future before them, and I am confident that their utility qualities together with their smart appearance and gentle natures, will add to their popularity with the poultry-keepers of Great Britain.

THROUGH AMERICAN EYES.

Early History.

ALTHOUGH there appears to be no reliable information with respect to the early history of the Sicilian Buttercup in America, we think it can be taken for granted that a number of specimens of this breed have been kept since 1860 or thereabouts. For a few years there were some breeders of note perfecting this native fowl of Sicily, but apparently the breed was lost sight of until about the year 1897 or 1898 when a number of birds were imported direct by Mr. J. S. Dumeresq and the Rev. A. B. Browne.

The breeders of Sicilians vary considerably in their ideas respecting this breed, therefore we think it may prove of interest to our readers if we give short quotations from their writings.

The Standard.

At the present time the question of the standard has raised a great amount of discussion. In writing on this question Mr. A. O. Schillings refers to the adoption of the Rhode Island Red standard and suggests the following procedure in this case. He says:—

"When Rhode Island Reds made a bid for public favor, the same conditions existed until a committee

was appointed by the club to adopt an ideal type and breed to it. I worked in conjunction with this committee for some time, and finally the ideal drawings which are in use at the present time were adopted as the club model. This was a move in the right direction as it enabled Rhode Island Red breeders all over the country to know the ideal they were striving to attain, and resulted in a greater uniformity of type and color of all Rhode Island Reds throughout the country."

This appears a timely suggestion and we hope that it will be carried out. A large number of writers have something to say with reference to the colour of the ear lobes. Mr. F. L. Platt remarks that

"It fell to our lot to judge the class at the recent New York State Fair, and that week we met Mr. Tillinghast, secretary of the American Buttercup Club. We asked him why the club standard did not call for an all red earlobe, since there was a leaning that way. He replied that a number of the members would never permit it. Let us say to Buttercup breeders, that before your breed is accepted by the American Poultry Association and admitted into the Standard, you must know positively whether you want a red earlobe as standard or not. If you do, it will take the combined effort of your members to have a Mediterranean breed accepted with such a color requirement. The red lobe is a race characteristic of the Asiatic, the Leghorn, Ancona, Minorca, and Spanish, which came from the shores of the

Mediterranean, having white lobes. That old Rouan fowl, the Dorking, had white lobes until the infusion of Asiatic blood was made by English breeders in the last century. It is this unmistakable Asiatic blood that gives the Buttercup its comparatively docile nature. In the writings of breeders of the fowl we have noticed again and again reference to the fact that "this breed is tame and will not wander off and roost out."

Mr. A. O. Schilling agrees with this idea as will be seen from the following:—

"Before leaving the matter of ideal heads and combs we wish to call attention to earlobes. This section is described under the present Standard as follows: 'red predominating with least possible admission of white.' Buttercups are a pure Mediterranean breed, and have a tendency to show considerable white in lobe, judging from conditions as they appear in the average flock as we find them to-day. All Mediterranean breeds in the American Standard of Perfection are described with white earlobes, and we see no reason why Buttercups should be the exception. White lobes are as much a natural tendency as red lobes in the breed, and we personally believe that this matter should be considered carefully from the view point previously mentioned before fixing a standard. It is our opinion that white should be encouraged instead of red, for the simple reason that it is a Mediterranean breed characteristic, and that a white lobe is more fitting and attractive."

On the point of colour of plumage everyone seems to agree that the standard is indefinite. The former of the two writers quoted says:—

"Unfortunately the club standard is indefinite as to the marking of the black plumage. Those who drew it up have made a fatal error. It reads: 'Black, golden buff, mottled with black; mottling to consist of well-defined black spots.' From the beginning judges have looked upon the Houdan with its black plumage, broken with mottles of white, as a typical mottled fowl. To apply mottling to the Buttercup has led to every conceivable pattern being shown, and judges have shut their eyes and picked out the Guinea male from the Guinea female."

Whilst the latter has it that:—

"In describing the standard color of female we consider the following wording entirely too indefinite; 'black, golden buff mottled with black; mottling to consist of well-defined black spots.' We believe that the ideal feather should be described accurately and then apply this description to all the feathers in all sections in which they are to be found. We do not believe that barring, as some authorities have described the marking, is a correct expression for the pattern in question. We believe that it would be advisable for the club to appoint a committee to take up this matter and decide upon exactly what is correct and fitting in the form of an accurate word description."

The question of plain or mottled breasts is one which seems to be worthy of consideration. We have read with interest what Mr. Gori has to say on the subject and note that he advocates some mottling in breast and fluff. We are inclined to disagree with him on the ground of past experiments which we made in breeding other particolored varieties. First of all we believe that to admit a mottled breast would destroy the beauty of the breed to a large extent, and we feel confident that if breeders remain persistent in aiming to produce plain breasts it can be accomplished very readily."

Seeing that this breed is comparatively speaking a new one, we would expect some difference of opinion and it is certain that the standard will have to be modified ere long. That this belief is not held by Mr. H. W. Dewey, President of the American Buttercup Club, is made plain by his statement that the Buttercup standard:—

"Is not an infallible document, but it is the result of the best thought of our most experienced and successful breeders. Before its adoption we were all at sea with no port in view. We were afloat on the trackless deep. Now we are ashore, and begin to know 'where we are at.' The Rochester standard became at once our chart and compass, and though we may have been unfortunate in the use of a few words, yet I feel that any essential change would be a calamity. I speak as I do because word has come that an effort will be made to rewrite some portions. So-called standards that fluctuate are not standards at all. I feel sure that a very large majority of Buttercup breeders will agree with what I have said, and oppose standard tinkering. A further reason for keeping hands off, is that English Buttercup breeders have organized, and adopted the American Standard of Perfection."

The Sicilian as a Utility Breed.

Dr. L. D. Sutherland makes them rank high in the category of utility breeds. He knows:—

"Of no breed that equals or compares with the Buttercup for utility purposes. In the first place they are easy to raise, being very hardy and excellent foragers, reaching maturity early, and as a result are good broilers and early layers. It is no trouble to get pullets laying by December, and they will continue to supply you with large, white eggs practically all the year through. The eggs are of a high quality, and being white bring a larger price in most markets. Buttercups stand confinement well, and are much less wild than their competitors in the egg business, the Leghorn family. Give them a good open front house, proper care, and a well balanced ration, and they will do the rest. They are non-sitters, and you avoid the trouble you have with many other breeds of being broody from time to time. I have bred and raised a great many of the leading varieties of fowls, and can speak as one who knows what he is saying, when I recommend the beautiful little Buttercups as a utility fowl."

I have experienced little or no difficulty in breeding females that will produce 200 eggs or better per hen per year. To do this you don't have to have great experience, simply get a start with the right kind of stock, use the up-to-date methods in care and feeding, and you are bound to win.

"Pin your faith to Buttercups, and you won't regret it."

Other advocates are equally as emphatic as the foregoing writer, and they speak highly of this breed. Mr. William D. Corwin, New Paltz, N.Y., says:—

"As I am a breeder and great admirer of the Sicilian Buttercup, would like to give my experience with this wonderful new breed. The first and most important point is that they have not been produced from a cross. They are probably as old as any poultry in existence. The natives of the Island of Sicily are not fancy poultry breeders, but yet they always admired this breed, calling them Buttercup after the buttercup flower, as their comb starts as a

single comb, then develops in a cup shape as the flower buttercup. Since breeding them I have found them continuous layers of large, white eggs. I have never found one broody. They are very tame. I can go in my yards and pick most any one of them up. Their comb is not large enough to be frost bitten in cold weather if kept in a moderately warm house. They are plump and make quicker and better broilers than the Leghorns. The deep red of the males and the speckled buff of the female, together with their odd comb, make them the most beautiful bird I have ever seen. If one wishes a general purpose breed, a utility breed for shipping white eggs in New York market, or for fancy points, choose the Buttercup and you have all points in one breed."

Mr. C. E. Perry, Supt. Poultry Dept., Oregon State Fair, in the course of a letter remarks:—

"Relying to your valued favor, asking my experience with the 'Buttercups,' I desire to say, this is my first season with this noted breed, but I am free to say that to me they are to be classed as one of the greatest all-round fowls now before the public. Of late much has been said and claimed for them, but I have failed so far to find a claim that cannot be fulfilled. I have been a breeder and importer as well as an exhibitor of thoroughbred poultry for more than fifty years, and I am free to admit that I never had a breed of fowls that have given me more real pleasure than the friendly 'Buttercup.' I say friendly; yes, they certainly make friends, as they become so tame that anyone cannot but admire them. There is a very great interest in them on the Pacific coast, and the demand for stock has been far more than I could supply, and even at this date I am far behind my orders for eggs, and I think that another season will see a larger demand than the supply, and there is little doubt that now, as they are to be bred to the Standard, more interest than ever will be manifest".

And Mr. Charles Warrick gives it as his opinion that

"I find them the best all-round fowl I have ever bred. I have bred a large number of breeds in the last 40 years. As layers they are ahead of the Leghorns. They are less inclined to be broody than the Leghorns, lay more eggs, just as large and just as white. They are more gentle, less nervous and average larger in size. Are not so inclined to use their wings to fly over the fence when yarded. The young roosters develop quickly to the size of broilers; the pullets begin to lay at five to six months, are a good table fowl when matured, and are rapidly coming to the front, not alone because they are being boomed, but because people are coming to recognize their real worth. I repeat again, they are the best all-round fowl I know anything about. There may be better fowls than the Buttercups, but I certainly never have bred them. Anyone who takes up the Buttercup to breed is sure to have for years to come the most popular breed in poultrydom."

One of the best descriptions we have read is that by The Fowlers of Maplecraft, Youngstown, Ohio, written in a delightfully easy style. They write:—

"We will not follow the beaten path, as is usual in articles of this kind. Enough has been said, and will be said hereafter of Buttercup history, and Buttercup laying records, Buttercup fancy will have its share in the discussions of the future. While we will always keep ourselves in a position to laud

Buttercups, we will try hard to keep ourselves within a conservative limit, in any claims of superiority we may make for them at this time.

The concern of this article is with reference to Buttercup utility, and we want to help them to prove that they belong to the class that has been claimed for them. The best way to do this is 'Everybody Push,' but as some won't push and some can't push we must do the next best thing, 'Push Harder.' We want Buttercups to come and stay and they will, but they will come better if rightly heralded. We hate to think of them being sent out from the home range to—the Lord knows where—without some word in advance to help the beginner to success with them, and incidentally also help the cause of Buttercups. Not that they need to be 'coddled' and 'nursed.' 'Very much no.' But beginners often—and others occasionally—become the owners of a flock having no knowledge of—and sometimes no inclination to do—the right thing in the way of their care and treatment. This applies to all breeds as well as Buttercups and it is to do our 'Push' toward improving this condition among Buttercup breeders that we are striving.

We would like it—if we could by making judicious claims—create a demand for Buttercups from a class of customers, who know from experience—before they make an investment—that in every business there is 'Grief and Toil,' 'No excellence without great labor,' 'No safety without eternal vigilance,' all of which applies to the chicken business as well as all other, and Buttercups have no 'Royal path,' around this 'Rough and Rocky Road.'

We would like to—if we could—use a club when a would-be breeder writes that he wants some 'good stock cheap'—meaning probably prize-winning pullets that are bred to lay two hundred eggs per year with very little feed and water and no care—at a 'dollar a head.'

We would like to—if we could—put the 'Kibosh' on every breeder, who by advertising extravagant claims for his Buttercups, not only causes the Buttercup row to be harder to hoe, but gives some little excuse for would-be breeders, aforesaid, to expect to get what he asks for.

We would like it if every member of the A.B.C. was like our president who—judging by his sentiments as a writer—we would term a conservative enthusiast or one who has a break on his mile-a-minute machinery making it perfectly safe.

We have under our hide a streak of conservatism also. It may be either too large or too small a streak and we may not be as discreet in handling conservatism as our president, but we are going to plunge right in and admit right here that perhaps Buttercups are:

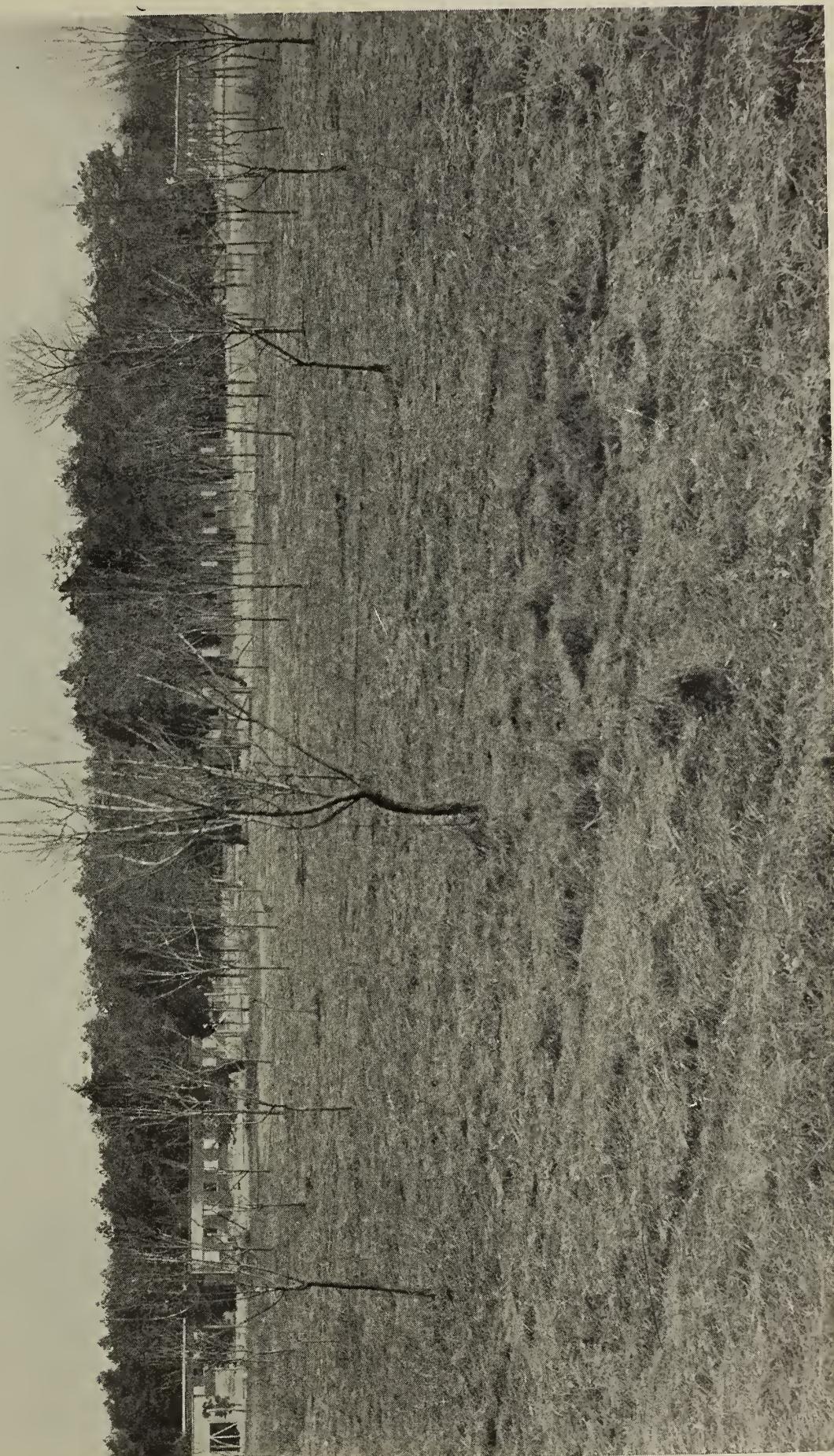
- No more docile than Orpingtons.
- No more active than Leghorns.
- No more beautiful than Hamburgs.
- No better marketable colour of skin than Rocks.
- No better broilers than Wyandottes.
- No better layers than Rhode Island Reds.
- No quicker maturing than Anconas.
- No smaller eaters than Bantams.
- No hardier than Langshans.
- Layers of no whiter eggs than Houdans.
- Layers of no larger eggs than Minorcas.
- No nearer non-sitters than other Mediterraneans.

We would not miss it much to reverse these comparisons, but as they are would not that entitle the Buttercup to recognition as the cubic 'bird,' the all-round quality bird, the bird that is 'right side up' under all circumstances? Nothing phenomenal about any of these claims except that the general average of excellence is somewhat above 'par,' but even with this array of quality they deserve and need the right care and attention to do their best, to

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AN EXTENSIVE AMERICAN EGG RANCH.

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which no other breed will make a quicker and more appreciative response."

That the Buttercup is not yet a finished product is emphasised by Mr. H. W. Dewey when he says that

"Much is left for us to accomplish, and here is where the pleasure comes in. I study to mate my pens in a way to obtain perfect cup combs on the males, and I try to get the golden buff, and the well defined black spots on the females, but I confess that for every success, I must admit a dozen failures. Why then do I breed Buttercups? Why not give them up, and go back to one of the old well-established breeds? My answer is because I am not ready to turn my face towards the setting sun. Because a diamond in the rough is of more value than a common stone, no matter how highly it may be polished. Because the Buttercup is the coming

fowl. If there was nothing to strive for, nothing to overcome, half the pleasure and zest of living would be gone. I am in the game partly for pleasure, but if I were in wholly for profit I would still breed Buttercups, for the little hen from Sicily has more utility points than any other fowl."

This coming from the President of the American Buttercup Club, who is not a man given to exaggeration, indicates that there is a future before this breed, a future due entirely to its utility characteristics. The future will prove.

We are indebted to the *American Poultry World*; *Poultry Success*; *The American Poultry Advocate* and the *Reliable Poultry Journal* for the quotations used above.

WHY ARE BUTTERCUPS POPULAR?

By H. W. DEWEY, President American Buttercup Club, Sidney Centre, N.Y., U.S.A.

A MAN living in another state—so I was told—had secured a pen of rare and unusually interesting fowls called Buttercups. As none of my fancier friends were able to give me reliable information concerning them I sought the owner, first by letter, and later I journeyed to his home.

My visit resulted in the purchase of a hundred eggs, which I committed to a refractory incubator that gave me but three chicks.

My poor hatch was a great disappointment, but the birth of this lonesome little trio really marks the beginning of Buttercup enthusiasm in America.

I had been an indifferent breeder of the more common breeds, but here was something new and interesting. By diligent search I located a dozen or more men and women, in half as many states, who had tested the breed and were delighted. Meanwhile my two pullets had matured and were giving me eggs with surprising regularity. Every egg they gave seemed an appeal to me to do something to promote the breed.

Accordingly I undertook the work of organization, and on March 28th, 1912 the American Buttercup Club came into being with twenty-one members. Although two years have not yet passed, our club membership has passed the five hundred mark.

At the great Palace show held in New York in December last, there were more Buttercups shown than birds of any other breed.

The growth of our club, and the wonderful interest the breed has awakened suggests the question, why are Buttercups popular?

Perhaps it is partly for the reason that attention was directed to them in the nick of time. There were Buttercups in this country half a century ago, but at that time they failed to attract interest. Rocks and similar breeds had to come first into favor. Valuable as these breeds have proven, their exasperating habit of persistent broodiness had caused many of their warmest admirers to long for the appearance of a breed, equally domestic, that did not manifest this annoying tendency, and Buttercups fully met the desire.

The coming of the incubator prepared the way for the advancement of all non-setting breeds, but who that has kept Leghorns any length of time is not tired of "choking swears," that their wild nervous dispositions provoke?

So I say, Buttercups arrived just in the nick of time. All was ripe and ready for their coming. But to arrive on time is not all the more important part is to make good, and this is what Buttercups are doing. First of all Buttercups are a business breed. Fancy means "something that pleases without real value." Utility mean "profitableness to some valuable end." Buttercups belong to the utility class, and here they should be allowed to remain. Let me say that Buttercups do not breed as true to feather as most breeds, and quoting from my catalogue will add that "Sicilians seem not to be interested in fancy fowls. They have no written standard, and markings are nothing to them. If biddy makes good at the nest, no more is required of her, and she is at once admitted to the best society in the island. It is common to see chickens in Sicilian homes and running about the tables (so we are told), and it is not strange that Buttercups are very domestic, for their ancestors have been trained to domestic habits for many decades." The paragraph just quoted is literally true. In many parts of Sicily, fowls are admitted to the homes as we admit the house cat.

The name Buttercup was first applied in America, and some present day writers have graciously informed us that the breed originated in America. They have gone on to tell us how to produce the ideal Buttercup comb by certain crosses.

Of course all such talk is veriest nonsense. Buttercups are not an American cross, but a Sicilian breed. How or when the breed originated, no one seems able to tell. A letter which the writer received from an intelligent Sicilian says: "This special type of fowl which you have named 'Buttercup' was originally from a farm established near Palermo in 1819, by Ferdinand I., King of Naples."

A friend who has travelled extensively informs me that he saw an oil painting in the Vatican gallery that faithfully portrays the Buttercup type, including comb formation, and that a farm scene, in oil, that hangs in the Louvre galleries portrays the same type. Both of the paintings are centuries old.

I am informed that when Sicilian peasants are questioned concerning the origin of the "Sicily fowl," they only reply: "Our fathers and grandfathers kept the same breed, but where they obtained their stock we do not know." They seem to know of no other breed.

With these and similar facts in mind, all of which are available, it is silly for anyone to speak of Buttercups as an American cross.

Along this line it should be said, the best Buttercups to-day are not in Sicily, but in America.

The peasant class in Sicily are poor, and often ignorant. Intelligent, combined effort to improve either themselves or their fowls seems out of question. The Buttercup type is found over the Island. In the mountain regions among the poor sulphur miners as well as in the vicinity of Palermo. A letter that is before me, from a traveller in Sicily says:—"But in the poorer districts, and especially in the mountains, the care and feeding of fowls is left to the women. The doors of the log cabins are left open, and flocks of chickens and flocks of children wander in and out at will."

The same letter says: "Poultry is the mountaineer's source of revenue, and is too precious to be killed for the table."

It would be unkind to say that mothers in the mountain districts of Sicily do not love their "flock of children" more than all else, but the chickens, the little Buttercups as we have named them, come next. And now they have crossed the seas, and are winning our affections.

I must remember that I am writing for English readers, and may I say again that the best Buttercups are no longer in Sicily, but in America. Lest I be accused of not speaking the whole truth I will add that some of the poorest Buttercups can be found in America.

Only a few weeks ago I trusted the representations of an American breeder who said he would supply me a pen of "twelve choice specimens of the breed," at a price which I paid only to find that I had trusted the representations of a scoundrel.

Buttercups are in great demand, and though I am ashamed to confess it, it is nevertheless true that some American breeders are none too honest. There are plenty who are reliable, and I mention the fact that some are unworthy only to put my English readers and others on their guard.

That Buttercups have come to stay, there can be no reasonable doubt. If some of your chicks are off color, do not be discouraged, and do not blame the breeder who sold you the eggs.

As I have often said, Buttercups are not a finished product, but they come to us with egg laying tendencies well established. There can be no better foundation on which to build. I am pleased to know that their merit is already quite widely recognized in England.

Do not believe unreasonable claims about them or about any other breed, but if you are looking for a partner in the egg business, one that knows how to aid in turning your efforts into profit, then I commend to you the hen from Sicily, and I do this in full confidence that if you do your part, she will do hers.

Dr. Raymond Pearl.

In addition to Mr. Edward Brown, F.L.S., as recently recorded, the Imperial Russian Poultry Society has conferred its Honorary Membership upon Dr. Raymond Pearl, of Orono, Maine.

A Cry from Mansfield, U.S.A.

The Mansfield Poultry Association has adopted a motion to President Wilson "praying that some immediate action be taken to relieve the poultry industry of this country from the prevailing grain prices."



Stock Turkeys on a Monastery Poultry Farm.

[Copyright]

THE BREEDING OF POULTRY IN PRACTICE.

By EDWARD BROWN, F.I.S.

IN the following notes an attempt is made to submit for consideration of those engaged in the practical breeding of poultry some of the questions which present themselves, the solution of which will be helpful to all concerned. It should not be forgotten that in this direction whilst we must regard immediate and special conditions, the experience of those who have trodden the same path previously may help in the avoidance of many pitfalls which are always in the way of all who are seeking for improvement.

Value of Examples.

The first step which should, therefore, be taken by the beginner in this pursuit, or by such as desire to introduce a better class of stock, is to choose the breed or breeds which it is intended to maintain in accordance with definite principles. This question involves careful consideration before it is finally determined. Should it be, as is frequently the case, that there are already other breeders who have proved the adaptability of given breeds to the immediate conditions, and have been successful in their operations, it is a wise policy to build upon their experience, rather than to strike out in other directions. On the other hand, should it be that examples are available of breeds which have failed in these respects, then such classes of poultry should be avoided. In that case, before choice is made it is wise to make careful enquiry as to how any breed has acted elsewhere under similar conditions of soil, climate and elevation, for in this matter much guidance can be obtained, and many mistakes avoided. The point here submitted is specially important in a highly diversified country like the United Kingdom. Adaptability to environment, therefore, is a supreme consideration, where the object is profitable production of eggs and flesh. Such cannot be determined as a question of fancy or arbitral predilection. These must be left to the amateur and the exhibitor.

Uniformity of Breeds.

With regard to how far uniformity of breed in any district is desirable, it may be permitted to reproduce what I brought forward at the Dublin Conference in 1911: "Enlargement of choice may be a positive hindrance. Indiscriminate racial selection is, generally speaking, a mistake. A measure of uniformity of the fowls met with over a given area, where the environment is equal, is natural, provided, of course, that the

breed or breeds are suitable thereto. Let me remind you that France built up her poultry industry in this manner, and later observations have confirmed the wisdom of so doing. Nearly all the most successful developments of recent years have been on these lines. Egg production in Denmark, at Petaluma in California, in the State of Rhode Island, and in Australia; table poultry in South-eastern England, in Buckinghamshire, in various departments of France, in East Flanders, and in the South Shore districts of Massachusetts, have, in each individual instance named been mainly with one breed, modified here and there by introduction of a second. It may be pointed out that, when such is the case, it is much easier to appreciate the racial values, and a single breed is capable of more rigid and careful selection, generation after generation, than is possible when all sorts are found in a district, whilst the introduction of fresh stock of a high quality is made easier. I submit that the time has arrived when our main effort should not be restricted so much as in the past, to increase in the number of fowls kept—at any rate over those sections where the most progress has been made, though the United Kingdom could treble its stock of poultry—as to advancement of the productiveness of what we now possess. A good deal has been done in this direction, but much more remains to be accomplished for improvement." Unity of choice is of primary importance. It is preferable, therefore, as a general rule, to adopt the breed which is mainly found in any given area, and which has proved its suitability thereto, so long as that retains its virility and productiveness. We have sufficient instances to show that changes are required, for races of poultry in process of time become exhausted, as do plants and cereals. Cases in point are the substitution of the Faverolle for the Houdan in the Seine-et-Oise district of France, and of the Bronze American Turkey for the Black Norfolk in East Anglia. These might be multiplied, but will suffice to illustrate my point. When that is true pioneers render valuable service in testing new forms, and ultimately should lead to a general transference to the race found most useful. Whilst on the other hand indiscriminate introduction of breeds in any district, making for lack of uniformity in the produce marketed, on the other hand retention of a class of bird which has lost its economic value, is foolish in the extreme—a species of conservatism which is individually and nationally a distinct hindrance to progress.

Choice of Individuals.

Not alone are there great variations between the races of poultry, more especially fowls, but also differences between individual members of one breed or race or variety. No two birds are ever exactly alike. As to many of the causes of such variation we have no reliable data available. One pullet will often lay double the number of eggs produced by a full sister hatched from the same nest. Some of these differences may be due to the fact that the families or strains have been bred and reared under totally different conditions and for different ends. This question of variation is of the deepest interest, but cannot now be discussed. That is dealt

stock, more especially if the soil conditions were favourable to the purpose in view, selecting continuously for quantity and quality of flesh in the chickens, for softness of bone, and to some extent for size, he would evolve a totally distinct strain, one in which egg production would be very much lower than that first named. And, if a third breeder set out to produce Bantams, he could, in process of time attain that object, although it would take much longer to realise. In each of these the racial characters could be maintained pure, the difference being in size, type and productiveness. I do not say that as a question of economics the ends in view could not be arrived at more speedily by the introduc-



Another specimen of Mr. H. W. Dewey's Sicilian Buttercups. [Copyright.]

with in my work "Races of Domestic Poultry." It is enough if I point out that the plasticity of poultry and their responsiveness to conditional as well as selective influences, have the effect of modifying both external characters as well as economic qualities, though only partially accounting for the variations met with. For instance, taking one of the modern varieties, say, the white Orpington, it would be possible to produce three, if not four types. If one breeder set himself to improve the laying quality and over a series of years selected as stock those with smaller sized bodies which have proved themselves to be high in fecundity, mated with males which embody the same quality, he would in course of time evolve a distinctive type. Should another breeder take the same original

tion of alien blood. In doing so, however, other changes would probably result, modifying the distinctive racial characters. As will be evident the power in the hands of breeders is very considerable, though there are limitations imposed by natural tendencies and influences. A further point is that the standards adopted check natural developments in the way suggested.

Structure of Body.

The experience is that it is impossible to breed without variation. That is true in regard to external characters and equally so with productive qualities. Were it not so breeding would be as easy as it is now difficult. What are commonly called "sports" that is, exceptional and often unexpected departures from the

normal, are usually mutations, without power of transmission to future generations, though that is not always the case, because many varieties of breeds have originated in this way, and are sometimes permanent. Abnormal laying may also be so classed. If variations were easily transmitted from one generation to another, we should lose even the measure of fixity we now possess, and there would be no certainty in breeding. At the same time improvement must be through individuals, or as stated by Professor Eugene Davenport, "the excellence of breeding is mainly shown in the capacity for development," which may include every part and every function of the body. Capacity and fulfilment, however, are not the same. That all poultry have greater capacity than is developed is evident.

It is desirable to enquire how far it may be possible to form a judgement as to economic qualities by the shape and structure and general conformation of each individual, presuming that these are in conformity with the general type of breed or race. It is undoubtedly true that we cannot expect a merely mechanical grading, working with the exactitude of a barometer. But it is within general experience that functional development is in correlation with general appearances. The signs which mark meat breeds of cattle from dairy stock are evident, though in the latter are great variations so far as the milk yield is concerned. That, however, is due to development of inherent capacity.

As a consequence we are justified in expecting that, as a general guide in selection, there are indications of service to the breeder, though these may not be absolute. The most we can expect in this way is that the latent capacity can be discerned. Development of that capacity will depend upon other influences.

If the structure of fowls is considered we are at once met with the fact that the best quality of flesh is found upon the breast. The object of all who seek to breed first-class table poultry is an abundance of breast meat, with as little as possible elsewhere. This is secured by expanding the muscles covering the sternum, and as a consequence development is entirely in that direction. Invariably is this associated with large wings, for the flesh on either side of the sternum form the motor muscles for the flights. On the other hand in developing the laying powers of a hen, there is enlargement of the egg organs, for one of the best known facts in connection with every form of life is that use increases and disuse decreases, size. As the egg organs of a fowl must necessarily lie in the posterior part of the body, if they are specially developed, it will be found that the entire part is large as compared with breeds or families bred

for table or breast properties. It should here be pointed out that the posterior part of a hen is greater than that of a cock, for the simple reason that she has to provide for egg organs, and he has not. At the same time the structure of the male of a highly fecund or a full fleshed breed or family, conforms to the type of the race. And a further point is to be noted, namely, that in heavy laying birds the legs are set well apart to give play to the egg organs.

Size of Body and Size of Eggs.

That the size of egg as produced by many breeds of fowls is abnormal may be accepted, due to better feeding and selection. My immediate purpose is to show that the size of egg does not follow that of the body. With the exception of the Dorking, all the larger breeds and varieties of fowls lay comparatively small eggs in relation to the size of the hen's body. In contradistinction the largest eggs are produced by breeds which are small or small medium in weight, as, for instance, the Minorca, Andalusian, Braekel, and Leghorn. Some of the largest bodied fowls, notable, the Cochin and the Indian (Cornish) Game lay small, though very rich eggs. The Turkey hen lays a small egg, very little larger than that from fowls, though the body weight of the parent is two to three times as great. I do not suggest that the larger eggs contain more nutriment to the extent of their increased weight, for such is not the case. As, however, size is a marketable factor it must be considered. Careful selection may increase the size of egg, as it has done in many breeds, but appears to be more easily accomplished with small than large bodied races, as indeed is attainment of greater fecundity.

Eggs Four to the Pound.

A United States Consul in China tells of hens in Manchuria which lay eggs weighing from five to seven to the pound, six to the pound being common and usual. He tells of some at Antuag which averaged four to the pound, some slightly below and others $4\frac{1}{4}$ oz. That, however, he states, "is not a daily performance." The birds are said to resemble Langshans. We wonder if this will be the next boom. A four ounce egg would want a good appetite.

The pineal gland in fowls.

An Italian Scientist records that as a result of removing the pineal gland, which is in the head connected with the brain, from male fowls at the age of from 20 to 30 days, the size of the comb and the testicles are very much increased. In the case of pullets growth was somewhat retarded for a time, but there were no differences observed at maturity between the normal and experimental birds.

SOME ECTO-PARASITES OF POULTRY.

BY D. F. LAURIE.

Government Expert for South Australia.

The animal parasites, generally termed mites and lice by breeders, belong to the group

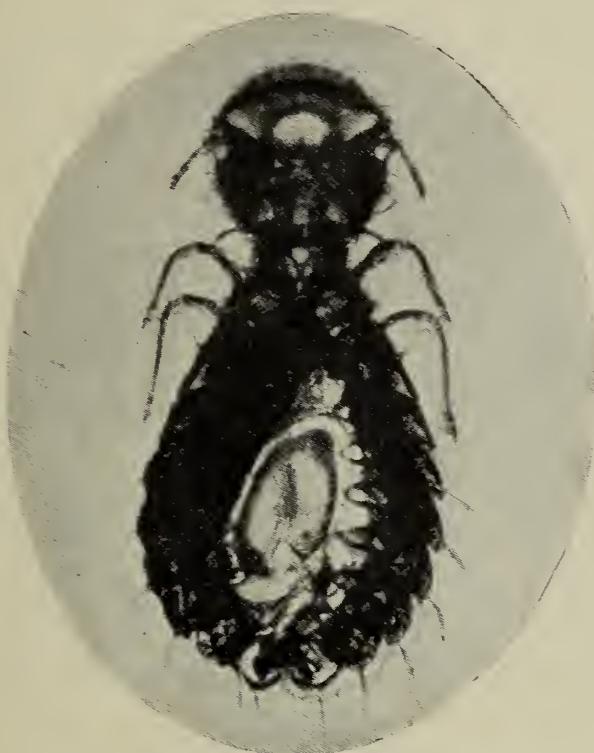


Fig. I. Goniocotes Gigas, Taschenberg.
Female, Ventral.

Arthropoda, or jointed-limbed animals. They are again divided into the *Acarina* (mites) and the *Mallophaga* (lice).

The lice are true insects, but in a degraded form through the loss of wings. They live upon the skin, devouring its debris, and often causing lesions or sores. Others live upon the feathers, and sometimes cause a more unsightly appearance on the birds. The lice live permanently on the poultry, only leaving the body after death of the host, or, as most poultry men know, when the host—the infested bird—is handled. Mites and poultry fleas are only partial parasites, as they do not as a rule live on their host, but pay visits for the purpose of blood-sucking, &c. As a rule poultry lice are easily exterminated, and in this respect are not comparable with poultry tick. Dipping in any of the sheep dips, kerosine emulsion, and in numerous proprietary dips, which are legion, is a cheap and effectual method of dealing with this pest, as, in addition to the parasites, their eggs also are destroyed. The most important point to observe is that all methods

must be thorough. If birds are infested they must be dipped, and at the same time the poultry houses and roosting places generally must be thoroughly cleansed, and by the application of suitable agents the vermin and their eggs must be destroyed. It is futile to expect to eradicate vermin by methods commonly adopted, such as throwing about a few pounds of lime or a handful or two of sulphur, or by a half-hearted application of a little weak spray of some insecticide. In addition to vigorous measures, the provision of dust baths is to be commended. These should be under cover, and may consist of fine road dust, to which may be added wood ashes and a little sulphur. The fowls will, as a rule, frequently resort to these dust baths, and so rid themselves of the pests, which are smothered and destroyed by the fine dust. Some fowls do not avail themselves of the dust bath, and this is especially the case with male birds. At regular intervals the birds should be examined, and if infested in the



Fig. II. Goniocotes Gigas. Head of Female.

slightest degree prompt measures should be adopted. When this advice is universally put into practice there will be far less heard of many diseases which at present cause great loss.

Poultry lice belong to the sub-order of

Hemipterous parasites. Neumann says, "These are small-sized (only a few millimetres in length), apterous insects, of a dull-white color, and the mouth of which is adapted either for pricking or masticating. The head bears two simple eyes, or *ocelli* (often but little distinct), and two antennæ, composed of three, four, or five articles. The three thoracic segments are more or less confounded with each other. The abdomen is generally composed of nine segments. The legs are ordinarily short and strong. The tarsi are formed of two articles, the last of which has two nails, or hooklets, by which the insect can creep. The eggs, called nits, are pyriform, have

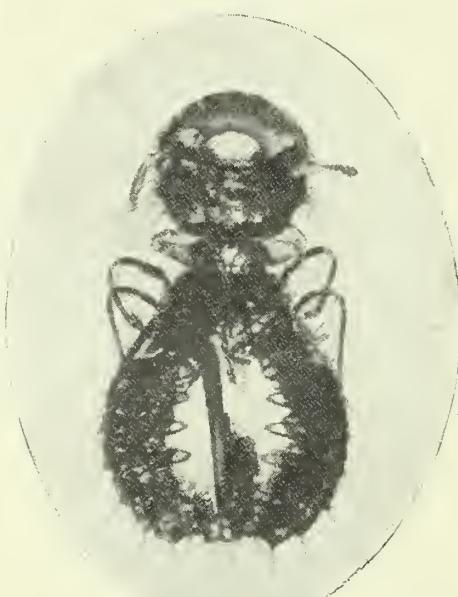


Fig. III. *Goniocotes Gigas.* Male, Dorsal View.

an operculum at one end, and are fixed very solidly to the hairs or feathers by a glutinous substance. The young, which leave the egg by the operculum, have quite the shape of the adults, and do not undergo any metamorphoses, though they only acquire their definitive color and consistency after several moultings.

MALE AND FEMALE.

The male and female differ from each other in the former being a little smaller than the latter, frequently by peculiarities in the antennæ, by the last abdominal segment being divided in the female and rounded on the male, which has also, on the middle line, a copulative apparatus of a brownish color, and digitiform or lancet shaped. The males are usually much less numerous than the females.

Of the Hemipterous parasites there are two families, the Pediculidæ and the Ricinidæ. With the latter, or Mallophaga, we have now to deal. These have the buccal apparatus formed for mastication; they are pellivorous in the matter of feeding, and live on the epidermic (skin) productions or upon the feathers (penni-

vorous). The pieces constituting the mouth are placed at the inferior (lower) surface of the head. The tarsi (end of legs) terminate in one or two claws. These Mallophaga do not suck the blood, and are in some respects commensals as far as the scurf-eating species are concerned. The Ricinidæ, or Mallophaga, are divided into two subfamilies. The Philopterinæ, which have the antennæ composed of three or five articles, and have no maxillary palps, and two (the Liotheinæ) whose antennæ have four articles, and are provided with quadri-articulated maxillary palps projecting beyond the anterior border of the head. The Philopterinæ are divided into 11 genera, but of these only five are parasitic on birds, viz., *Ornithobius*, *Lipeurus*, *Goniodes*, *Goniocotes*, and *Docophorus*.

The Liotheinæ comprise 10 genera, of which the following are parasitic on birds, viz., *Trinoton*, *Colpocephales*, and the *Menopons*. As these are probably all in this State, they will each in turn be briefly referred to as the occasion arises.

GONIOCOTES GIGAS (Taschenberg.)

This belongs to the subfamily Philopterinæ, family Ricinidæ, suborder Phthiriases; host, the domestic fowl.

This is the largest of the species of the *Goniocotes*, and is recognisable by its round and

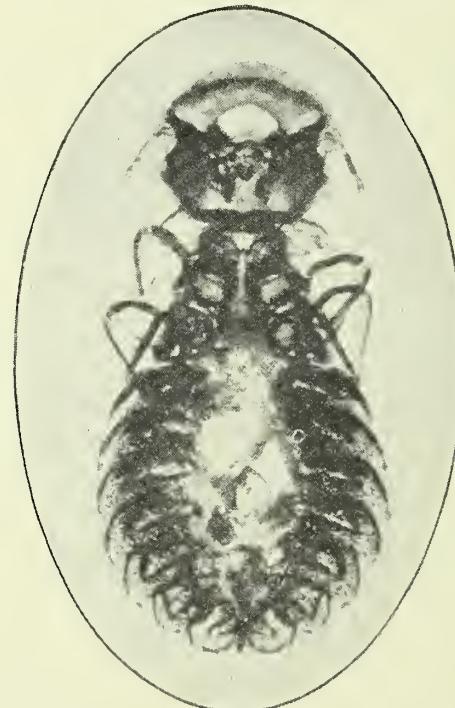


Fig. IV. *Goniocotes Gigas.* Female, Dorsal View.

very large abdomen, as well as by its great size. The general color is light-yellow, the abdomen, and metathorax are brighter colored, and the bands and outline of the spots are dark. The female is 4mm. and the male 3mm. long. The specimens here illustrated were whitish on the

back, and the characteristic curved markings are almost black. This species is pellivorous, that is, it lives on the epidermis. Theobold records it as not very common in England, and that he has not seen it on the fowl. Neumann describes it and figures it. In the United States of America Department of Agriculture bulletin on Insects Affecting Domestic Animals it is mentioned, but the distinctive 'gigas' is given as a synonym for *abdominalis*, Piaget. Curiously enough, the authors of the bulletin write, 'It is the form commonly referred to in English and American works as *Goniocotes hologaster* which doubtless accounts for its not having been described until quite recently.' Either this is quite wrong or else both Neumann and Theobold are wrong; these world-famed authorities figure "hologaster," which is a most markedly distinct species.

The series of micro-photographs are from mounts by Mr. D. F. Laurie and in each case there is considerable magnification. Any good insect powder dusted among the feathers will speedily destroy these insects. Dipping, as previously advised, may also be resorted to.

DESCRIPTION OF PLATES (Photo-Micrographs).

Plate No. 1 shows a large female *Goniocotes gigas*, viewed ventrally (from the under side). Four of the six legs are shown slightly extended; the third pair is only partly visible. The bristles on various parts of the parasite are also clearly depicted. Shows a characteristic rounding of the posterior portion of the body, and also the first articles of the antennæ, which are longer on the male than on the female. The strong legs and claws are well shown.

Plate No. 2 shows a much enlarged view of the head, and gives details of the antennæ, mouth parts, bristles, and portion of thorax. This is the head of parasite shown in plate 1.

Plate No. 3. A dorsal (looking down on the back or upper surface) view of the male *Goniocotes gigas*.

Plate No. 4 shows another female, dorsal view, slightly smaller than that shown in plate 1. This illustration well depicts the characteristic body markings of the species. Upper articles of limbs, the antennæ, bristles, and mouth parts are also clearly shown.

ELECTRIC CHICKENS.

In the course of a paper read before the Society of Arts on "The application of Electricity to Agriculture," Mr. T. Thorne Baker, A.M., I.E.E., F.C.S. made reference to his experiments with chickens. We quote this part of his paper from the *Journal of the Royal Society of Arts*.

To come now to some practical experiments in the application of an electric stimulus to animal life, I can think of no more commercial example than the growth of young chickens hatched in incubators. As is well known, chickens weighing a few ounces only, and about twelve weeks old, fetched a remunerative price in the market—as much as 1s. 6d. each—as "petits poussins." Such chickens can be grown under electric stimulus at about double the rate, thus doubling the output of a chicken farm, and halving the food bill per chicken. But what is of far more importance from an economic standpoint is the decrease in the death-roll during the first few days after hatching. In the summer months the mortality is often as much as 50 per cent.: thus, out of 100 chickens one may not rear as many as 50 to the age of three months. This disastrous mortality is practically non-existent where suitable electrification is used.

Let us consider an actual example, carried out on Mr. Randolph Meech's poultry farm at Poole. An intensive chicken-house, consisting of six flats, each large enough to accommodate 75 chickens, was electrified by a large helix of heavily insulated wire wound round it in turns about six inches apart. The current was applied for ten minutes every hour during the day. Six chickens only out of a total of 400 died, showing a mortality of only 1·5 per cent., and the chickens were ready for market despatch in five weeks as against three months. Experiments are now being carried out on a far more extensive scale, and we hope to deal with as many as 4,000 chickens at a time.

This was an experiment carried out on a large scale, after a very large number of tests I had made personally. My own first results were made on weight only, the chickens being given the same amount of food, and weighed at regular intervals. After three months the increase in weight of the electrified chickens was about 35 per cent. In another instance, one set of chickens was grown against another, and the electrified chickens were only given two-thirds of the food given (per chicken) to the others. After one month the weight per bird was the same; in other words, a chicken grown under the influence of electricity will grow to normal weight with two-thirds only of the normal amount of food, or with the full amount of food it will grow about a third as heavy again to twice as heavy. In either case the chickens showed signs of their second feathers much earlier than usual.

The vitality of the treated chickens is remarkable. Instead of running away when one puts one's finger to the netting, they will rush up and peck vigorously. During the treatment they are so highly charged with electricity that quite a distinct shock is felt in the fingers on touching them, although the birds themselves are supremely unconscious of anything. The sparks which fly from their beaks on their pecking one's finger do not appear to be felt in the least by them.

A SOUTH AFRICAN BREED OF POULTRY.

We recently had the pleasure of a visit from Mr. Geo. Bustin, of Rietfontein, Pretoria, whose hobby for many years past has been the study of poultry and their diseases, and who has done a good deal of work in connection with the production of new breeds (says the *South African Journal*). The particular object of Mr. Bustin's visit was to introduce us to certain new breeds which he has after a great deal of study succeeded in evolving. These he has named "Bustin's Black Pretors." We learn that the origin of these breeds was the outcome of a determination to out-breed "liver disease," which is so prevalent among poultry in South Africa, especially amongst the heavier varieties. Each year the most healthy specimens were picked out of two distinct varieties and cross-bred. Their progeny was again mated to another variety, and this procedure carefully followed. The result was that each year there was an improvement in vigour, and the birds were constitutionally sounder. "Before doing this, Mr. Bustin explained, "I was convinced that the South African climate is second to none in the rearing of poultry, and that most of the imported fowls are too much inbred for show purposes, utility being sacrificed to appearance. Seeing that no one was making any attempt to produce a South African fowl I decided to embark upon this work, unaided by any outside help or advice; and I can now claim to have produced two distinct varieties of fowl which can exist in any climate in Africa, and which, further, can be fed upon the staple food of the country—maize (preferably broken). Of course," Mr. Bustin continued, "other grains can be given also. Why I mention maize is that every poultry writer decries its use, without knowing why, as they have not taken the trouble to experiment."

We reproduce here some photos of Mr. Bustin's new fowls. The single-comb variety is a large bird, greeny-black in appearance, with dark feet, black eyes, white ear-lobes, red comb, upright carriage, and broad-chested. They are, Mr. Bustin tells us, fine layers of large (almost round) brown or tinted eggs. For several years he has got from 178 to 200 eggs per hen in twelve months, and as he only hatches from the best layers each season he expects to produce better layers each year. The birds are very active foragers. Although Mr. Bustin introduced, among others, two sitting varieties in the production of this breed, they have so far (for the past two years, since breeding true) proved false to some of their ancestors—none having become broody. The hen is smaller than the cock, and their combs are also much smaller. The second, or rose-combed, variety was produced as the result of a freak, the outcome of a cross from the single-comb variety. This freak Mr. Bustin took advantage of and evolved the rose-combed variety, which proved to breed true from its third year of mating. This variety lays a good-sized white egg, is black, with dark legs, black eyes,

white lobes, rose-comb, and is about the size of the American White Leghorn. The birds lay on an average 190 eggs per annum, but they will improve in this direction each year. Mr. Bustin informs us that both these breeds are absolutely free from disease of a tuberculous nature. They have been reared on plain grain, green food (no green bone or hot mash), with liberty on the open veldt. Their houses are, however, free from draught and are clean, and the birds have plenty of exercise. Chickens from both these varieties mature very quickly and lay at the age of eight and six and a half months respectively. Mr. Bustin informed us that he has another breed evolving, but he could not say much about it yet, as this is only its third season.

AUTUMN HATCHING ON A SUSSEX FARM.

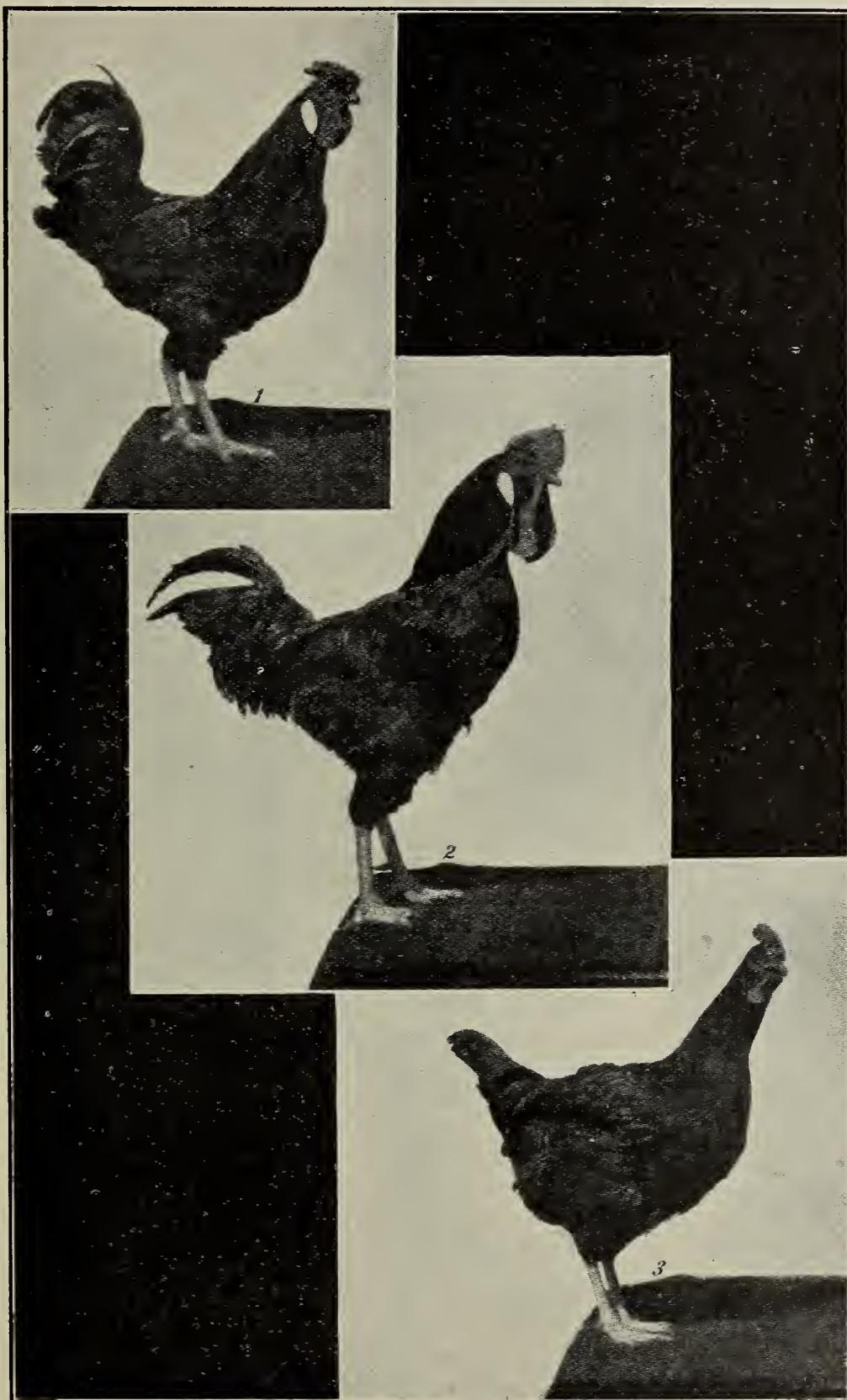
A couple of weeks ago we had an opportunity of visiting a very successful poultry farm in the neighbourhood of Singleton, belonging to Mr. G. Tanner, of East Dean, Chichester, and we believe a few particulars may prove of interest to our readers.

The farm is run entirely for the production of eggs and table poultry, and, therefore, it is a true utility yard. The land, over which the birds are run at liberty, belongs to a neighbouring farmer, and being on the downs there are a number of fields which are eminently suited for the purpose.

The majority of the birds are light Sussex mated with Faverolles and buff Orpingtons, and exceptionally good results are obtained from these crosses.

At the time of our visit there were well over a thousand chickens running about, of which about 650 were hatched in October, 250 in November, and to the 14th of December another 170 were added to the number. Before the turn of the year at least 250 more birds were expected. These are all destined for the London market and they should realise good prices, as the first batch should be ready for sending away in two months time.

All hatching is carried out by the natural method, there always being an abundance of broody hens on the farm. To give an indication as to the quality of the eggs we may remark that in October the hatching percentage of all eggs set was over 80 and in November about 74. The best autumn season that the farm has had was in 1911. This is surprising, seeing that it followed such an exceptionally hot and dry summer. In the September of that year 247 eggs were set, producing 229 chickens, giving a percentage of 92.71. The figures are worth analysing. In all 19 hens were set with 13 eggs apiece. The hatching was as follows: 7 hens 13 chickens; 7 hens 12 chickens; 4 hens 11 chickens; and 1 hen 10 chickens. We should imagine that this constitutes a record. We have never seen a finer lot of chickens than those running about at the time of our visit.

**BLACK PRETORS.**

A new variety described on previous page.

MORE ABOUT "THE CINDERELLA OF AGRICULTURE."

By "STATISTICIAN."



PUBLICATION of the Annual Report by Mr. T. H. Middleton, Assistant Secretary of the Board of Agriculture, as to grants in aid of and the present position of Agricultural Education in England and Wales,¹ affords an opportunity of again presenting facts in relation to the poultry industry, showing once more how little is being done in the direction of promoting what is the most important minor branch of rural pursuits. Although in many respects this is the best of the series of reports yet issued, upon which Mr. Middleton may be congratulated, in that several new features are introduced, one of the most notable of which consists of reports by Inspectors of the Board as to the teaching at some of the institutions enumerated, although only a few of these are dealt with, there are many omissions. For instance, no record is given as to the expenditure by County Councils of the money expended in Technical Instruction, so that we are denied the opportunity of making those comparisons which would reveal the present scandalous condition of affairs, namely, among all the money expended upon Agricultural Education in this country, how infinitesimal is the share which falls to what I have previously called "The Cinderella of Agriculture," which term I may be permitted to use once more. The poultry industry has still to be content with its ragged garb, the cast-offs from the wardrobe of its more favoured sisters. The reason for the omission stated, and for the non-publication of figures which formerly was an annual feature in these annual reports, appears to be obvious. They revealed too much. Suppression is, therefore, the policy. Perhaps, however, in the future the information may be forthcoming.

Previous articles² on the subject now under consideration have been given in the POULTRY RECORD. I do not wish to go over the same ground, but to deal with the question as dealt with in the latest report.

The grants in aid during the year 1912-13 made by the Board were as follows :

	£
(a) Educational Institutions... ...	19,140
(b) Agricultural Research Institutes	6,434

¹ Annual Report on the Distribution of Grants for Agricultural Education and Research in the year 1912-1913, Cd. 7179.

² See "The Cinderella of Agriculture," Vol. II., October, 1909; "The Whiskey Money and Poultry Instruction," Vol. II., August 1910; "Significant Omissions," Vol. III., December, 1910; and "Agricultural Colleges and Poultry Instruction," Vol. III., March, 1911.

(c) Special for Agricultural Research and Experiments	3,008
(d) For Provision of Technical advice for Farmers and the Investigation of Local Problems ...	1,568
	<hr/>
	£30,150

Whilst part of the sum named would be applied to poultry at Colleges, &c., where this subject is taught, the amount could be a very small proportion. The only specific grant is under £, namely, £196 to Cambridge University for Poultry and Rabbit breeding. In the same period specific grants of £1,700 were made to Horticultural Institutes and for fruit experiments the annual production of which is according to the census of 1908, less than that of Poultry.

In addition grants were made from the Development Fund for buildings, &c., amounting to £62,495, of which Poultry was represented by £500, the amount allocated to the Utility Poultry Club for equipment of its Twelve Months Laying Competition. Had, however, the proposed National Poultry Institute materialised, this table would have been increased by £8,500, which would have made it more equitable.

As mentioned above, a new and valuable feature is that of reports by the Board's Superintending Inspectors on certain institutions in receipt of grants. Five are thus dealt with, of which one, the Harris Institute, Preston, does not include poultry-keeping in its operations, and another, the East Anglian School of Agriculture, only does so to a very limited extent. I hope that in future reports the others will receive the same attention. I quote below what is said about each.

THE COLLEGE OF AGRICULTURE AND HORTICULTURE, HOLMES CHAPEL, CHESHIRE.

Here is a joint lecturer in Dairying and Poultry-keeping, Mr. G. W. Lallemand, N.D.D. So far as theoretical instruction is concerned, only one hour's instruction per week in poultry is given, which is inadequate. The report says :

Poultry-keeping.—The Syllabus is so arranged that only a part of the subject is covered in each year : thus, while in the first year the different breeds and the management of the breeding pen are dealt with, the subjects of incubation and the rearing and feeding of chickens are reserved for the second year, and the anatomy of the fowl, disease, and marketing for the third year.

In view of the importance of combining theoretical teaching with its practical application in the poultry yard, it would be desirable to modify the syllabus so that the teaching in each year should, so far as possible, apply to the seasonal routine of operations in connection with the stock during that year.

This would also afford such students as may not complete the three years' course the opportunity to acquire a more comprehensive knowledge of the subject than is possible at present.

So far as the practical side is concerned, the farm consists of about 84 acres, on which is a Poultry Section, described as under:

Poultry Department.—A stock of from 100—200 head of poultry is kept on the farm, and consists of pure-bred birds such as white Wyandottes, Faverolles, Orpingtons, Rhode Island Reds, white Leghorns, a certain number of selected first crosses, a flock of Indian Runner ducks, and of Aylesbury ducks. The quality and condition of the stock are satisfactory.

Suitable accommodation is provided for the breeding pens in a row of well-constructed houses, with covered sheds and enclosed runs, which are situated at a convenient distance from the College building. A portion of the stock is located in portable houses in various fields on the farm. The two flocks of ducks occupy separate pens, and are supplied with good houses and have free access to a pond.

Provision is made for fattening a few birds regularly for demonstration purposes in a small open-fronted shed, in which the coops are placed for trough feeding.

The equipment for natural and artificial incubation and rearing is adequate; machines of both the hot air and hot water type are used for artificial incubation.

The birds are kept under healthy conditions; ventilation, cleanliness, and regularity in feeding receive due attention, and the general condition of the plant is sound.

The general observations made as to the section says:

Educational value of the Poultry Department.—The students are required to perform regular duties in connection with the care and management of the stock, and these duties are so arranged that each student acquires a practical knowledge of the details of the daily routine in regard to the management of farm poultry.

The lecturer conducts practical demonstrations in killing, plucking, and trussing poultry, and the students are afforded opportunities for practice in these operations.

While experiments are carried out to a limited extent in this Department, it is probable that more work of this nature could profitably be undertaken; familiarity with approved methods of conducting experiments would afford the students a valuable training in attention to detail, and would tend to cultivate the power of observation.

Trap-nests do not appear to be in use, or to form part of the equipment, and it is desirable that the practice of collecting accurate laying records by this means should be encouraged. The use of trap-nests involves additional labour, but in an educational establishment this labour would be well spent.

The formation and maintenance of approved strains of fowls producing a high average yield of eggs are of educational and practical importance.

The distribution of eggs for setting to farmers, smallholders, and labourers in the County might be further developed by the College, particularly if

attention were directed to establishing flocks of tested layers specially maintained for that purpose.

More attention might be paid to turkey-raising, as this branch of Poultry Culture does not appear to receive adequate attention.

MIDLAND AGRICULTURAL AND DAIRY COLLEGE, KINGSTON, DERBY.

At this institution is a full time Poultry Instructor, Mr E. Russell, who has as assistant Mr. J. V. Moore. The in-college students give two hours per week to this subject, and a special poultry course is arranged from time to time. Very little is said in the report as to this teaching, as is seen by the following quotation:

Poultry-keeping Course.—Once each year a special poultry-keeping course is held, opening in April and continuing for a period of twelve weeks. The curriculum provides instruction in all branches of the subject and at the close of the course the students are required to undergo an examination conducted by an external examiner whose recommendation must be obtained before the College Certificate in Poultry-keeping is awarded.

This course has been in operation only since 1910.

The observations and criticisms made on the poultry plant are:

Poultry Department.—The poultry pens, boiler house, food store, and fattening shed occupy an enclosed space of about two acres, situated a short distance from the College. There are 18 large pens with grass runs, in which the adult stock is housed, and there is a row of 18 smaller pens, the majority of which were unoccupied at the time of inspection, and some of these were being modified and improved.

The general arrangement of the houses and runs is not such as to economise labour, nor is their character such as to give the students a practical knowledge of the different approved methods of housing. In an educational institution of this kind it would seem desirable to demonstrate various methods of housing and feeding.

The stock consists of about 180 adult birds, while 1,000-1,200 chickens are hatched annually; many of these are sold as day-old chickens. No particular provision is made for reserving ground for rearing the birds and the Instructor has pointed out the necessity for taking some steps to provide additional ground for this purpose. Breeding pens of selected Sitting and Non-Sitting varieties are maintained, such as Sussex, Wyandotte, Orpington, Minorca, Leghorn, and Aylesbury ducks. No stock of turkeys is kept and no turkeys are regularly reared.

An excellent Incubator room containing six machines, some of the hot-water and some of the hot-air type, has been erected close to the College and adjoining the fire-engine shed.

The supply of appliances for artificial and natural rearing appears to be adequate, and many of the coops and chicken arks have been made by the Instructor, or by the students, under his supervision. The fattening shed provides ample accommodation for a sufficient number of birds to afford the pupils useful practical instruction. A cramping machine forms part of the equipment. During the autumn and winter months the Instructor is engaged, for the greater part of the week, in extension work, and the management of the yard is carried on by his assistant, a youth who is learning to become a fully qualified poultryman. It is desirable that the general arrangement of the pens should be modified

and that the appliances should be improved in certain directions.

The work of this institution in relation to Poultry is thus summarised :

Educational value of the Poultry Department.—Students attending the Course of Agriculture receive, in the third term, one hour's instruction per week on the Management of Farm Poultry.

Students attending the Dairy Teachers' Course receive one hour's instruction per week in Poultry Keeping during the first term.

Students attending the short Course in Dairying receive one hour's instruction per week.

Students attending the twelve weeks' Course in Poultry Keeping receive three hours' theoretical instruction and seventeen hours' practical instruction in Poultry Keeping during the week.

About 150 sittings of eggs from the College pens each year are sold to applicants, and the Instructor in his report for the year ended 31st May, 1912,

A suggestive comment !

HAMPSHIRE FARM SCHOOL, BASING.

No record is given of any instructor in Poultry-Keeping, except as stated below. Dairying, poultry and bees only have four hours devoted to them in combination. The section is described as follows :

Poultry Department.—A row of four breeding pens with houses 12 feet by 8 feet, open scratching sheds and enclosed yards, adjoins the farm buildings. The runs are close to a grass field, so that each pen of birds is allowed free range on the field every fourth day. A small incubator room contains two machines of the hot-water type, and one artificial brooder is provided. There is a small fattening shed fitted with the necessary appliances for demonstration purposes. At the time of inspection the stock consisted of two pens of white Wyandottes, one pen of Houdans, a



DUCK BREEDING PENS.

Each pen has house, grass run, gravel run, and water.

[Copyright.]

makes the suggestion that all eggs of the laying breeds so distributed should, in future, be the produce of birds which have been trap nested and of which the records are known. Three to four hundred day-old chickens are also sold to applicants each year. During the year ended 31st May, 1912, 94 Lectures were delivered at 24 centres in the Counties of Derbyshire, Nottinghamshire, Leicestershire, and Lincolnshire. The average attendance was 31. No systematic experiments appear to be carried out in this Department.

EAST ANGLIAN INSTITUTE OF AGRICULTURE, CHELMSFORD.

So far as this institution is concerned all that is stated is that :

The Dairy School is staffed by a Head Instructress and an Assistant Instructress. The School is not so full in winter as in summer, and in winter the Head Instructress gives external lectures on Poultry-keeping at various centres in the county. She also judges dairy produce and poultry at various shows during the year.

few speckled Sussex, and some young birds hatched in 1912.

The housing, equipment and stock in this department might with advantage be varied, increased and improved.

The subjoined comments are made respecting the teaching :

Educational use of the Poultry Department.—The Instructor in Poultry-keeping is also responsible for instruction in Butter and Cheese making and in Bee-keeping. This combination of duties places him at a disadvantage, and the staff might wisely be increased so as to distribute the work. Each student is required to carry out a regular routine of duties in the poultry yard for one consecutive month during his course of study. Demonstrations in artificial incubation and rearing, in fattening, killing, plucking and trussing are attended by all the students.

Sittings of eggs from the School pens are distributed to farmers at reasonable prices, but no trap nests are used to ascertain the actual laying records of the birds. The Instructor delivers lectures at various centres in the County during the autumn and winter.

(To be concluded).

SOME BLACK-RED YOKOHAMA HENS.

BY E. H. TURRELL.

President of the Yokohama Club and Club Judge.

WHAT are the average profits of the Black-Red Yokohama Hen? Perhaps this is the question in varying form, which comes most often to the poultry Editors of to-day, and it is one which, it must be confessed, is usually answered in a very unsatisfactory manner from the inquirers' viewpoint.

In order to give the enquirers and readers (of

the South end partly open and protected by 2 inch mesh wire, trap door 12 by 18 inches was also in that end and kept always open. Midway in the west front was a large door that sunned the house effectually when open on fair days. After the first winter rain the fowls were cut down to half the yard space and both portions of the run dug up and the reserved part sown with any quick growing



A splendid example of a Black-Red Yokohama.
The property of Mr. E. H. Turrell.

which there are many) of the ILLUSTRATED POULTRY RECORD, facts and figures in place of generalities, the writer has kept an accurate record of a flock of Black-Red Yokohama hens for the year ending September 30th.

This flock consisted of 50 pullets and is large enough to be taken as the unit of a commercial egg farm. The pullets were hatched March 22nd, 1912.

Their quarters consisted of a grass run, 35 feet by 100 feet and a night house, 6 feet by 14 feet, elevated from floor, 7 feet front, 5 feet back, and raised 18 inches from the ground, with

crop, but for an hour each evening during the rainy spell, they were allowed the range of grass plot until spring, when their temporary fence was removed from their run and they were turned into the crop which was just started to head.

These fowls were given no stimulants, egg foods nor any medicines except in dry hot spells a little sulphur was occasionally mixed with the middlings or shorts used in the mash. No pepper was put in the mash, but the latter was always salted as if for one's own use. Very little meal food, almost too little, was given during the entire time. Six penny

worth of fresh meat scraps per week, and four cakes of beef cracklings being the sum of the meat supply for them and their watch dog for the year. During the first season until the late rains of winter, they were short of fresh green feed, the main dependence had to be clover hay and sprouted barley. But they were fed regularly and well, the hoppers and drinking vessels were kept clean, the water pure and food sound and sweet. The house was *cleaned daily* and kept entirely free of all kinds of insects.

In the following record I have not only given the number of eggs laid for the year, with their wholesale values, but I have given the monthly output together with the average wholesale price for extras for each month of the year. These prices change little from year to year and the person contemplating the poultry business may learn from them how to estimate his possible sales. The given prices are for first class eggs, if about 2 ozs. each, the smaller eggs would all grade one penny each and more per dozen below these quotations.

FLOCK RECORD FOR FIFTY BLACK-RED
YOKOHAMA HENS.

Month.	Eggs Laid.	Average Price			Value.	
		Per Doz.	s. d.	£ s. d.		
OCTOBER	695	2 0½	5 18 5			
NOVEMBER	908	2 3	8 10 3			
DECEMBER	896	1 11½	7 6 0			
JANUARY	711	1 9½	5 6 3½			
FEBRUARY	773	1 4½	4 8 7½			
MARCH	820	11½	3 5 5½			
APRIL	821	11½	3 5 6			
MAY	684	1 2	3 1 9			
JUNE	902	1 2	4 7 6			
JULY	824	1 3	4 5 10			
AUGUST	762	1 6	4 15 1½			
SEPTEMBER	453	1 8	3 2 6			
<hr/>		<hr/>			<hr/>	
Totals	9250	1 6	£57 13 2			
<hr/>		<hr/>			<hr/>	

AVERAGE NUMBER OF EGGS PER HEN PER YEAR 185, average number of eggs per hen per month 15·6, average gross receipts per hen per year £1 os. 10d., average cost per hen per year, for feed 7s. 11d. average net receipts per hen per year 14s. 11d.

For so large a number of Black-Red Yokohama pullets kept together in a comparatively limited space and not forced for egg production, 185 eggs per hen is a very good yearly average, even if the whole 50 had gone through the year. As a matter of fact less than 45 pullets completed the laying year.

In January and February 7 birds went into a partial moult as may be seen by the drop of some 200 eggs in the yield for each of those two months. One pullet devoted her time during March and April

to hatching a brood of chicks, and between the 15th of June and the 15th of September 9 hens through several causes became incapacitated and were dropped out of the yard. While there were a number of inferior birds in the lot it is very plain that there were a few that left the 200-egg mark far behind them, and I opine that if six of these had been in a run by themselves, as in our laying competitions, they would have given the pen holding the World's laying record a pretty good run.

THE MONTHLY AVERAGE.—A study of this presents some important points. In no month of the year did the pullets do any phenomenal laying, the highest monthly average per hen was a fraction over 18 eggs in November and 10 eggs in September when the most of the birds were in full moult, but they kept right on, and there were eggs doing every month of the year. In February, March and April almost every old setfast that had loafed six months during the Autumn and Winter would have left these pullets far behind in a monthly record, and this brings another point.

THE BLACK RED YOKOHAMA AS A WINTER LAYER. In glancing over a good many poultry publications I note that enquirers are almost invariably told that the Yokohama, while an excellent summer layer, is not so good a winter layer as breeds of the heavier classes. The monthly records of this flock refutes this assertion. Allowing for the seven birds that went into moult during January and February, the pullets, while doing excellent work in the spring and summer, did their heaviest laying in the five late autumn and winter months, when the market ruled highest.

THE WINTER MOULTERS. I note that the pullets that went into a partial moult at that season were those of weak constitution, thin combs and narrow bodies. Whether this point will be substantiated in other tests, only repeated experiments can decide, but it would be well for the poultry raiser to make a note of it and see if it holds good in his yards.

THE MAY CHICK. It has passed into a proverb among our poultrymen who keep poultry that the May chick is no good. Glancing at the above record we see that the egg yield was least in May of any month of the year until the fowls went into moult. Many of the hens became broody in that month, and all of them took a longer or shorter lay-off during some portion of that month. The secret of the lack of stamina in chicks that come in May is made plain; the run-down hens cannot impart the stamina to the egg. After raising a brood or taking a rest, if well cared for, the hens will make a new start and produce eggs with better breeding propensities

INDIVIDUALITY OF THE HEN. Though these pullets were hatched from eggs from the same breeding pens, and the same incubator hatch, and kept under the same conditions, there was two months time between the start in laying of the earliest

maturing pullet and the latest maturing one. The same difference is shown in the moulting of the birds. Some of them began dropping feathers in July, and one hen completed her molt by the middle of September, several went into full moult in August and many in the second week in September, while a few have as yet shown no signs of molting. Young hens as a rule moult much earlier than older ones.

PERCENTAGE OF LOSS. This was 6 fowls or 12 per cent. Two of these died suddenly without "symptoms," as often happens among a healthy flock of fowls. Nursing might have done something for the four ailing ones which were afflicted with wasting and weakness at the oviduct, but in nearly all such cases the only profitable cure is the hatchet. All but one of the six birds were pullets of less vigorous constitution as before mentioned. Such pullets may do very well for a while under good treatment, but they have not the stamina to hold out. Close culling of the pullet chicks would eliminate such stock from the flock.

LOCATION AND SOIL. A location sheltered from the east winds, where the ground slopes gently and is sandy or friable, is ideal for fowls, but such locations contiguous to our best markets are not plenty, and the market is worth more than the

location, as was proved with this flock of Black-Red Yokohamas, which were kept on a spot where the North-East winds had full sweep, at a height of 800 feet. The soil too, is heavy and undrained, yet in the past Autumn, which was one of the most trying upon poultry that we have ever had in this district (IDE-HILL, KENT), not a pullet had even the slightest cold, or has had at any time. This proves that proper housing will overcome the disadvantages of an unsuitable location.

COST OF FEED. This is given at the maximum, as bought by the sack from the miller. In poultry centres it would average considerably cheaper, and in the case of the farmer who raises his own feed and has many waste products besides with which to feed his fowls there would be a great reduction in the cost of feed. Still, at the maximum cost, we have a profit of 14s. 11 $\frac{1}{2}$ d. above cost of feed from each hen to pay for her care and lodging. Plainly, with fair and rational treatment, from 12 to 50 laying nens for the suburban or backyardee, and from 50 to 200 for the farmer, are a safe and gilt-edged proposition.

This flock record, which is accurate to a fraction of a penny, is proof conclusive that, if given fair play, the Black-Red Yokohama hen is a money maker.



On a Californian Chicken Farm.

[Copyright.]

A SMALLHOLDER'S FIRST YEAR.

CHAPTER II.

HATCHING AND REARING.

In establishing the poultry section of the smallholding there are three ways of stocking the yard, namely, by purchasing adult birds, day-old chickens, or eggs for hatching. The former, though entailing a greater initial expense certainly brings nearer the time when returns may be expected, and hence should be

It is impossible for us to give a list of all those breeders from whom stock birds, day old chicks and eggs for hatching can be bought. Reference to our advertising columns will give the necessary information as to reliable breeders of various breeds. Such firms as Wm. Cook & Sons, Wm. H. Cook, Ltd., W. Holmes Hunt, Miller, Combe Bank Poultry Yards, Miss Babcock and Mrs. Prideaux, all so well known that they require no recommendation.



A Black-red Yokohama Hen.
The property of Mr. E. H. Turrell.

followed when there is sufficient capital available. When cost has to be considered one of the other two methods should be adopted.

In any case, however, chickens must be hatched and reared each spring, not only so that that the head of stock may be increased to the full number, but also that young birds may be reared to take the place of the two-year old birds in the flock.

We desire, in this chapter, to discuss the question of hatching and rearing with special notice of the appliances that are required.

In some instances hatching will be carried out by natural methods: in other cases by the use of artificial means. In the first instance the appliances necessary are very simple. It is not a wise proceeding to set a hen in a nest box in the fowl house, as this tends to unsettle her, and hens as a rule are fickle enough without abetting them. For this reason special hatching boxes should be provided and these should be placed in an outhouse, apart from the other fowls, where they can be kept warm and in semi-darkness. The majority of appliance makers supply hatching boxes, but in making

a choice it is better to bear in mind that single boxes are better for handling and cleaning than groups of nests, though the initial outlay is rather more. This is a form of appliance that the smallholder could well make for him or herself.

It is when we come to the question of artificial hatching that great care is needed in selecting the make of incubator to be used. We are quite willing to confess that our opinion is that a hen hatched chicken is better than the machine hatched article, but if a scientifically constructed incubator is used the difference is very little indeed, and, when compared with the great saving in labour, need not be considered at all.

There are two types of incubators, the one in which the eggs in the egg chamber are heated by means of radiated heat and the other in which the temperature is maintained by diffused heat. At the present time we do not think it is possible to say that either one is superior to the other in results.

The earliest make—and one that still holds its position on the market—of the tank type of machine is the Hearson. This incubator has been tested for upwards of thirty years and it is certainly a first class hatcher. Although of more recent date, the Tamlin machine, constructed on much the same principle, is another example of an incubator that can be relied upon to produce good results. The former is rather more expensive, but it possesses a somewhat longer life than the latter. These two makes are in the forefront, and the results that follow their use demonstrate that they are hatchers of a large percentage of liveable chickens.

There are a number of makes on the diffusion principle, and although the Cypher's incubator was the first to appear in the British market, there is little to choose between the product of the best manufacturers. The Cyphers, Millers, and the Glevum are all first class machines and with the various devices for heating, regulating and ventilating they combine maximum results with a minimum amount of labour. They vary slightly in construction, but the general principals on which they are built, are very much the same. The fire proof lamp, a recent introduction on the part of the Cyphers Co.; the large oil reservoir and the electric light installation, to enable one to read the temperature easily, in the Glevum, and the moisture device in Miller's incubator, are points worthy of mention.

One machine on the market combines both the tank and the hot-air principles, this being Toope's "Asbestic Hen" incubator. This machine gives excellent results and it is the only type, as far as we know, which introduces

heating by radiated heat and diffused heat and ventilated by moist heated air, automatically supplied.

Although not of very much use for small-holders—unless they are running a hatching plant—we may mention two very good forms of Mammoth incubators. These are made in sections and can be used for upwards of 15,000 eggs. The Candee Mammoth is a splendidly constructed incubator, as is also the machine made by Messrs. Toope of London. The Candee, although American can be bought at a reasonable price, shipped ready for use, after fixing the legs in position.

Operators of incubators are safe if they follow the directions provided with each make of machine, and, therefore, it is unnecessary for us to particularise as to their working. A word, however, may be said with reference to the place in which the incubators are kept. The first point is that a room with as even a temperature as possible should be selected. Not that this is absolutely essential, but it will save the regulating and ventilating apparatus from undue strain, and will therefore conduce to better working. In the second place the room should be well ventilated, for not only is oxygen required for the proper combustion of the oil in the lamp but also by the growing embryos in the shells. Lastly the floor should be firm so that there will be no give in it, for this will at any rate influence the burning of the lamp even if it does not do harm to the embryo chickens.

For natural rearing the only appliance required is some form of a coop. For early rearing we prefer to use what is known as the double coop, namely, one that has two compartments, for in this case the chickens can be fed apart from the hen. For work later in the season the single compartment coop answers the purpose admirably and it has the added advantage of being slightly cheaper. Most firms make these goods, and, though they may vary slightly, there is no one that we can say definitely is the best. Special mention may be made of the coops and kindred appliances made by Brown & Lilly, Reading, and Boulton & Paul, Norwich.

When we deal with artificial rearing and the choice of the special brooder that is to be used, there is a greater selection. As with incubators there are various ways by which the temperature is raised in the sleeping place. In some cases a tank of hot water is used: in others the ingoing air is heated before passing into the inner compartment and thirdly by direct heat rays emanating from a lamp in the centre of the sleeping place. In practice it is found that

there is no difference in results from these various forms of foster mother, and choice is therefore only a question of individual fancy on the part of the user. Perhaps for the first two weeks the hot-air types are rather more convenient, but after this time the tank machines possess certain advantages.

Of the tank brooders the Hearson and the Tamlin are the best examples. They are constructed with a view to supplying a correct degree of heat and efficient ventilation. They can both be thoroughly recommended.

An excellent type of tank fostermother is the Morland Double Brooder. It contains 2 warm chambers heated by one tank and lamp, and so ventilated that different temperatures can be maintained in each at one and the same time. By this means it is as simple to raise two batches of chickens at different ages as those of one age. Messrs. Toope also make a hot water machine, namely, their "Challenge" hot water pipe brooder for use in a sectional brooder house. The hot water apparatus for this can be bought separately.

The best brooders heated by diffusion are the Cyphers, Glevum, and Toope's "Toronto" and there is no difficulty in maintaining the necessary high temperature even in the coldest weather. One machine, namely, Miller's, is heated directly by a lamp in the warm chamber, and this also has proved a very successful type of brooder.

The small appliances necessary for hatching and rearing, such as thermometers, testing lamps, troughs, toe-punches, and rings can all be purchased from the various makers mentioned above. A very good make of marking ring is that manufactured by Hills Rubber Co., of Reading. This make has been before the public for some years and has found favour in the sight of all users.

In rearing there are three methods that may be followed, namely, feeding on dry food alone for the first few weeks, on soft food or a combination of the two. When purchasing food care should be taken to secure the best possible for this comes cheaper in the end, as, not only is less wasted, but the chicks thrive better upon it.

The best dry chick feeds are Spratts' "Chikko," Miller's "Perfect" and Cypher's, and these firms also supply biscuit meals, clover meals, and various other meals suitable for forming a good wet mash. The chicken food sold by Messrs. White, Tompkins & Courage, called "Clarendo," has proved its value in bringing youngsters on rapidly for killing purposes, and at a very small cost. Results of experiments show this to be an excellent prepar-

ation. If the Smallholder proposes to mix his own chick feed he will find the granulated meat advertised by the above firms of first-class quality. In this case the following recipes may prove of value:—

For the First Four Weeks.

3 parts broken wheat.		
2 " maize.	1 part oatmeal.	
2 " dari.	1 part grit.	
2 " buckwheat.	1 " granulated meat.	
2 " canary seed.	1/2 " millet.	
1 " rice.	1/2 " hemp.	

From Four Weeks to Eight Weeks.

3 parts broken wheat.	1 1/2 parts granulated meat.
3 " maize.	1 part grit.
3 " dari.	1/2 " linseed.
3 " buckwheat.	1 " rice.

If each part represents 7lbs. each of the above will make a hundredweight.

Green food is essential and for this practically any form of young vegetable growth will do. Lettuce or cabbage leaves are very suitable and Jerusalem artichokes can be used with advantage.

After the first week, if the weather is at all favourable, the birds should be given a good run and the brooder or coop should constantly be moved on to fresh ground. Soil that is in any way tainted will affect the chickens adversely.

A very good plan is to feed the chickens for the first three weeks on dry grain alone, then give a feed of soft mash first thing in the morning followed by the mixture. At six weeks give soft food in the morning and at noon and grains at 10 a.m. and last thing at night; at nine weeks a feed of soft mash in the morning and grain at noon and in the evening should prove sufficient. The dry grains should be scattered in the litter of the coop or brooder in all cases, as this conduces to exercising the chickens—a very necessary attainment. Needless to say strict cleanliness and pure water are two factors making for success which must never be overlooked.

Eggs at the Theatre.

On the authority of a daily contemporary we quote the following:—

In Harrison, U.S.A., eggs have become so scarce that they are being used as a medium of exchange. Not only are they acceptable for payment at grocery stores and mercantile establishments, but also at the moving picture theatres. One egg admits a minor and two one adult.

We presume this applies to "new-laid" eggs; what accommodation would one be entitled to for a "fresh" egg, a "cooking" egg or the late Mr. Dan Leno's celebrated "electioneering egg at 9d. per gross"?

THE POULTRY INDUSTRY IN 1913.

By EDWARD BROWN, F.L.S.


 "MORE and better poultry," "more and better eggs," have been to a greater extent than ever known before the cry in the year under review. The present is the nineteenth annual report I have been able to issue. During the whole of that period, whilst increased production of native supplies has been persistently urged, at no time has demand been so great and prices so good as in the twelve months recently ended. That is all the more suggestive when the import statistics given in later paragraphs are studied. It will be seen that in 1913 there was a considerable rise in the volume of eggs and poultry received from overseas, as compared with 1912, yet prices have been greater. So far as native supplies are concerned there has been a rise all round, showing that consumption is advancing more rapidly than production, whether native or foreign. What is true in Britain is equally the case in other lands. During the late autumn in many rural districts, even so remote as Wales, there was a famine in eggs. Half-a-crown a dozen was frequently paid for "new-laid" in country markets, and 3d. each for some weeks was the rate in great centres of population. On the wholesale markets good fowls have this year advanced in values by 15 to 20 per cent. The Christmas trade was one of the best known. It is not a question of increased cost for food stuffs, but of consumption. One pregnant fact is that the United States have been importing substantial quantities of eggs from Europe, mainly Russia, and have also purchased high-class table poultry, which may mean much in the future.

The imperative need, as has been the case for some years, is a greatly increased home production. That is seen all over the country. It is undoubtedly true that many areas are to be met with where organisation on co-operative lines could be undertaken immediately, to the great benefit of farmers and other producers. Elsewhere production requires first of all to be stimulated. Societies already established find their chief difficulty is not the obtaining of satisfactory markets, but in satisfying the demands upon them. Competition for supplies is very keen indeed. In fact, the future of co-operation, so far as concerns the poultry industry, is mainly dependent upon how far production is advanced. That the country at large has a capacity for vast development, without interference with any other branch of agriculture, has been previously shown. Three to four times as many eggs and poultry could be produced in the United Kingdom. There is, however, a remarkable supineness on the part of county authorities to the importance of this question, and of inertia among those in whose hands the future lies. It is our business to bring about a change in both directions. One serious hindrance in many districts, is the as yet unsettled Fox question, due to the action of some Hunt Committees.

Unless something is done, and that speedily, very drastic steps will be taken by poultry-keepers in self-defence, the necessity for which many of us have endeavoured to avoid.

One effort in the way of stimulating production and organisation was the Egg and Poultry Demonstration Train, which traversed North Wales in April and May last. Full reports of that expedition have already been published, which it is unnecessary to reproduce. The enormous amount of interest aroused in the districts visited, and the awakening which took place as to the possibilities presenting themselves, require to be taken advantage of by County Education Committees, local societies and others, together with organised effort to extend economic poultry-keeping on a broader basis than heretofore, and on advanced lines, as well as combination for marketing the produce.

In one direction, I regret to state, a serious failure of effort has to be reported, namely, that the proposal for the establishment of a National Poultry Institute has not materialised. The Provisional Committee found itself unable to raise the funds required to realise the grants promised conditionally from the Development Fund, and as the Development Commissioners declined to revise the conditions it is possible the project may fall through. Such is a keen disappointment to those who have worked so earnestly for what would have been nationally of the greatest importance. What may be done in other directions is not yet evident. The need is greater than ever. Up to the present time there are few signs that Agricultural Colleges and County Education Committees are prepared to fill the void. At the sixteen Colleges of which records have recently been published, only four have whole time poultry instructors engaged, and the other four have instructors in poultry who combine that with some other subject.

During the year under review intensive methods of poultry culture have advanced to a greater extent than any other branch of the industry, chiefly upon "bird cage" lines. As a hobby or a recreation these can be adopted successfully, as we have known for years. Undertaken as a definite business is a totally different question, and it will be of interest to see how many of these enterprises are in existence five years hence. Where, in my judgement, the chief danger lies is the effect of breeding under this system, that is, what influence is exerted upon the stock. Should degeneracy follow then the end is certain. For these results one or two years are not enough. What will ultimately tell is the accumulation of influences.

As an instance of the effects of ultra-intensive and abnormal methods may be mentioned the disastrous epidemic which has devastated the poultry of Belgium during the last two seasons, where hundreds of thousands of chickens have died. This was anticipated in my report on that country,

published four years ago. Later observations have shown that it is largely due to loss of virility in the parents, as a result of bad methods of breeding and management, and unfavourable environment.

Considerable study has been given to the problem of fecundity, more especially in America. That is a question of supreme importance to all who are concerned with egg production. Not alone is it how many birds are kept, but the individual values. On the other side greater attention is being paid to the production of flesh. The Table Poultry Club is now in being, and proposes to conduct growing tests. Also, the Paynter experiment in Cheshire has aroused much notice. When the report appears there should be valuable data available.

One of the leading events of the year has been the merging of the National Poultry Organisation Society—which for the past fourteen years has taken a large share in development of the poultry industry in this country, both as to production and adoption of better methods of marketing—with the Agricultural Organisation Society. The last named has been charged with the responsibility of organisation and co-operation, and large grants are being made to it from public funds for that work. Under such circumstances those responsible felt that the time had arrived for a combination to be effected, in order that the poultry industry should have its share of the funds referred to. My own responsibility for this special side of the work will terminate

specimens, and an increased demand for geese, with better prices than known for many years. Breeders and rearers of both these classes of poultry should keep what is here stated in view.



White Yokohama Bantam Hen.
Belonging to Mrs. Prideaux.

As indicated above the imports of eggs and poultry in 1913 again show a marked advance, mainly due to increased supplies of eggs from Russia and of poultry from the United States of America. The trade and navigation returns recently published tell that the total annual values are greater than ever before recorded, and now exceed £10,500,000. The following are the figures, after deducting re-exports of poultry, for eggs are not so dealt with :

	1911.	1912.	1913.
Eggs ...	£7,967,555	£8,394,524	£9,590,602
Poultry ...	840,014	768,925	909,894
Totals ...	£8,807,569	£9,158,449	£10,500,496

The last returns I have received from Germany, as indicated in my report on that country, showed that the annual imports of eggs and poultry were £10,500,000, at which time the Fatherland was the greatest importer in the world. The United Kingdom is now equal, so far as values are concerned. What is the most striking fact is that from 1910 to 1913 eggs imported have advanced in values by £2,294,457, and poultry by £159,668, or a gross advance of £2,454,125, and 1913 far exceeds any previous year.

Taking eggs in the first place, the total number imported in 1913 was 21,579,950 great hundreds, or 2,589,594,000, equal to close upon 180,000 tons, thus reaching the maximum of any year recorded. The highest previous period was 1904, when the figures were 19,942,549 great hundreds, or 2,381,



White Yokohama Bantam Cock.
The property of Mrs. L. C. Prideaux.

in March next, thus closing what has been a very interesting chapter.

Two features characterised the Christmas markets of 1913, namely, the continuation of a lessened sale of huge turkeys, which formerly were in special request at higher prices per pound than for smaller

867,540, or a fraction under 166,000 tons, the declared value of which was £6,730,574. Thus, while the increase in quantities in 1913 as compared with 1904 was 8·21 per cent., the advance in values in the same period was no less than 41·44 per cent., practically five times as great.

It will help in this connection if the countries enumerated are dealt with in detail, so far as the returns are given. I have added the percentages of quantities to the official figures in the following table :

EGGS IMPORTED, 1913.

		Quantities gt. hds.	Values £	Percentage of total quantities.
Russia ...	... 11,453,277	4,745,229	53·07	
Denmark ...	4,264,943	2,296,843	19·76	
Germany ...	513,740	215,816	2·38	
Netherlands ...	977,350	490,717	4·53	
France ...	702,281	326,102	3·25	
Italy ...	845,789	420,914	3·92	
Austria-Hungary	883,651	375,943	4·11	
Other Countries.	1,938,919	719,038	8·98	
Totals ...	21,579,950	9,590,602	100·00	

It will be seen, therefore, that 72·83 per cent. of our total overseas supplies of eggs came to us from Russia and Denmark, leaving only 27·17 per cent. for all the rest of the globe, and that we paid these two countries £7,042,072, which is 73·42 per cent. of the total values.

The actual increases and decreases in quantities show more clearly what is taking place than the percentages of totals as given in the above table. These are :

RELATIVE IMPORTS OF 1913 COMPARED WITH 1912.

	INCREASES.			DECREASES.
	Quantities gt. hds.	Percentage of totals.	Quantities gt. hds.	Percentage of totals.
Russia ...	1,776,179	2·36	—	—
Denmark ...	641,128	0·78	—	—
Germany ...	—	—	10,937	0·37
Netherlands ...	176,123	0·33	—	—
France ...	32,594	—	—	0·26
Italy ...	—	—	112,555	1·1
Austria-Hungary	—	—	114,336	1·12
Other Countries	106,702	—	—	0·62

In view of the very large increase in quantities of eggs imported, amounting to 14,000 tons as compared with the previous year, it speaks volumes as to the growth of demand when we find that the average value has made a further advance. The figures since 1898 are :

AVERAGE VALUES OF ALL IMPORTED EGGS.

	s. d.	s. d.
1898 ...	5 10 per gt. hd.	1906 ... 7 6 ¹ ₂ per gt. hd.
1900 ...	6 5 ¹ ₂ "	1908 ... 7 10 ¹ ₂ "
1902 ...	6 7 ¹ ₂ "	1910 ... 7 11 ¹ ₂ "
1904 ...	6 9 "	1912 ... 8 9 ¹ ₂ "
1913 ...	8 10 ¹ ₄ per gt. hd.	"

Thus the increase from 1898 is 3/0¹₄ per great hundred, or 51·78 per cent.

The figures for the respective countries and groups enumerated are :

AVERAGE DECLARED VALUES OF IMPORTED EGGS.

From	1911.		1912.		1913.	
	Per gt.	hd.	Per gt.	hd.	Per gt.	hd.
	s.	d.	s.	d.	s.	d.
Russia ...	...	7 6 ¹ ₂	8	2	8	3 ¹ ₂
Denmark ...	...	10 2	10	9 ¹ ₄	10	9 ¹ ₄
Germany ...	...	8 1	8	4 ³ ₄	8	4 ³ ₄
Netherlands ...	...	9 3 ³ ₄	9	5 ¹ ₂	10	0 ¹ ₂
France ...	...	9 3 ³ ₄	9	2 ¹ ₂	9	3 ¹ ₂
Italy ...	...	9 6	9	10	9	11 ¹ ₂
Austria-Hungary	8	4 ³ ₄	8	5 ¹ ₂	8	6
Other Countries.	7	6	7	7 ¹ ₂	7	5

The group embraced under other countries show a reduction from 1912. Danish and German supplies are the same as the previous year; all others have increased, but to a very small extent, except the Netherlands, in which the 1913 values are 7d. per great hundred over 1912.

In so far as poultry imports are concerned, although there is a marked advance, the figures of the maximum year, 1904, were not reached. Then the total imports were declared in value as £1,089,044. The quantities, total values and averages per cwt., are given for 1912 and 1913.

IMPORTS OF POULTRY.

From	1912.		Average per cwt.
	Quantities in cwts.	Values £	
	s.	d.	
Russia ...	123,063	342,275	55 7 ¹ ₂
France ...	35,644	158,399	88 9 ¹ ₂
Austria-Hungary	28,296	97,641	69 0
United States ...	23,978	79,454	66 3 ¹ ₄
Other Countries.	36,185	129,648	71 8
Totals ...	247,166	£807,417	65 4
Less Re-Exports...	24,049	81,893	—
Net ...	243,117	£825,524	—
1913.			
Russia ...	119,944	344,665	57 3 ¹ ₂
France ...	31,175	142,256	91 3
Austria-Hungary	26,674	96,733	72 6 ¹ ₄
United States ...	54,350	212,130	78 0 ³ ₄
Other Countries.	46,430	159,454	68 5 ¹ ₂
Totals ...	278,573	£955,238	68 7
Less Re-Exports...	9,914	45,344	—
Net ...	268,659	£909,894	—

The imports from Russia, France, and Austria-Hungary have declined in volume, as have the re-exports, though not to a great extent. Increase is due, therefore, to very heavy advance from the United States, which have not, however, reached the maximum year, 1906, when we paid that country £243,750, and also from Other Countries.

The average values show a marked advance all round save in supplies from Other Countries. American supplies increased by nearly 12s. per cwt., or approaching 1½d. per lb., which is remarkable.

The exports of poultry produced in the United Kingdom were as follows :

Alive ... No. 54,249 ... value £27,820
Dead ... Cwts. 2,270 ... " 10,795
Total .. £38,815

The total consumption of eggs and poultry during 1913 (wholesale values) may thus be estimated :

Imported Produce £10,500,496
British " 9,000,000
Irish " 5,000,000
Total... £24,500,496

In all respects, therefore, the year under review has been phenomenal.

EGGS AND THEIR DESIGNATIONS.

[The following letter recently appeared in *The Times*, and has been largely reproduced in part at least. As it gives in succinct form egg facts, we think it should be placed on permanent record. EDITOR, I.P.R.]

The descriptions or inscriptions adopted by retailers in connexion with eggs are many and varied. Terms used frequently mean something totally different in shops within the same street. Districts in this respect have to be taken into consideration. What would be called a "new-laid" egg in Bermondsey might not rise above the "cooker" class in Bayswater. A "new-laid" in Hammersmith probably would be a "breakfast egg" in Hampstead. Quality is an abstract element determined, so far as food products are concerned, by the degree of palate education in consumers. It is not like a yard measure, absolute in extent, 36 inches, neither more nor less.

A case has recently been tried before the stipendiary magistrate at Burslem, Staffordshire, of a retailer for selling Russian eggs as "new-laid," and for which a fine with heavy costs was imposed. In the course of the evidence submitted for the defence, it was claimed that if an egg possesses all the characteristics of an English new-laid egg then it is a new-laid egg, with which I agree, provided, however, the English is really what is stated. Such could never be applied to a Russian egg. It might be to a proportion of French and Dutch eggs, but I know of no others which come up to the standard of quality required.

The term "new-laid" means what it says, namely, of recent production, and something more. Selected for size, shape, brightness, and smoothness

of shell, it must be full—that is, the air space very small—clear when tested by light, and firm in both the white and the yolk. Within a very few days the contents shrink by evaporation, the air-space enlarges, and the albumen becomes cloudy. Anything in the shape of interior blacks or spots disqualify an egg for this class. No long-distance imported, or native egg more than a few days old, can possibly retain the features named.

It is frequently thought that the designations "new-laid" and "fresh" are synonymous and interchangeable. I have said what the former means. The latter term indicates that it has not been preserved and nothing more. A "fresh" egg may be three months old, but it cannot be called "new-laid" by the greatest effort of imagination. In Germany this word includes all that are not preserved. To me the fact of an egg being so labelled is a warning to avoid it as far as possible.

What we want to arrive at on the part of producers, traders, and consumers alike is a clear appreciation of terms used, which in the best trade are :—

"New-laid."—Three to five days old, in accordance with the season of year, and in other respects as laid down above. These alone are recommended for boiling ;

"Breakfast."—In all respects the same, save that as they are a few days older there is a slight shrinkage and the bright appearance has gone. For poaching or frying these are excellent ;

"Fresh."—Not preserved. Good eggs for cooking, but nothing more. Usually foreign and inferior native supplies, in which value has been lost by delays in marketing ;

"Cookers."—A varied class, including "pickles," often very doubtful indeed. Faith is necessary for their consumption ; and

"Eggs."—Upon these the curtain may be drawn. A scrap-heap for the other classes.

Yours faithfully,

EDWARD BROWN.

38, Queen Anne's Chambers, Westminster, S.W.

Fowls and produce in South Australia.

The *Journal of Agriculture of South Australia* gives the following figures compiled from farmers' returns in 1912 :

NO. OF POULTRY.

Fowls	1,381,880
Ducks	53,340
Geese	19,356
Turkeys	43,920

Value of Poultry raised and Eggs produced £541,489.

MORTALITY IN POULTRY BY COMMON SALT.

To the Editor of the ILLUSTRATED POULTRY RECORD.

Dear Sir,

In September last a poultry farmer in the district had several fowls die, one of which was submitted to me for post-mortem examination. As it was night time when the bird arrived and no note accompanied it, I did not open it, but called on the owner next morning to obtain full details of symptoms and feeding. He kept about a hundred head of poultry, the majority of which were first crosses, and a great many pigs. The poultry were allowed to run in the same field and yard as the pigs, and were fed with soft food in the morning and grain at night. Until September last the fowls had been fed on a ration of sharps (thirds), barley meal and about a teaspoonful of salt added for every dozen hens. In September the ration was changed. Instead of having to mix the morning food separately, the poultry were fed on the same kind of food as the pigs. This consisting of mashed potatoes, boiled the night before in a copper, and dried off with bran, before feeding. The fowls were fed with an addition of salt to this food, as was previously his custom. This feeding started on September 5th. Next day several birds were seen moping about the yard. The only symptoms noticeable were inability to walk and a crouching attitude. On the following morning (7th) eleven birds were found dead below the perches in the roosting house and several others were unable to move. The same evening other five died. I caught all birds likely to die, i.e. birds showing any signs of disease, and gave them a good dose of linseed oil. There were no other deaths although several birds showed signs of paralysis, but gradually recovered after oil being administered. Post-mortem examination showed the bird to be in excellent condition. There was a yellow frothy discharge from the nostrils and beak. Internal appearance showed every symptom of poisoning. The membranes of the oesophagus and scrop were much inflamed, and the crop contained a fair amount of food material. The mucous membrane of the gizzard appeared quite normal, but the kidneys and liver were much delated. Microscopic examination showed haemorrhagic infiltration of the blood corpuscles. Degeneration had taken place in the epithelial cells varying in intensity. The vessels of the spleen were enlarged and showed varying lesions of acute congestion. The heart showed similar signs. The buccal mucous membrane of the digestive tract was much inflamed and full of a yellow soapy fluid, on removal of this fluid the membrane had a ribbed appearance and between these ribs (or rings) ulcerations existed, the surrounding membranous tissue, presented a dark red appearance.

The bronchial tubes were inflamed and there were extensive dark red patches on the lungs, indicating intestinal haemorrhage. The resisting

membrane below the lung was much inflamed and the surrounding tissue, very much contracted. I killed a bird suffering from this malady in its acute stages (temperature before killing 114°F). It presented the same appearance as in the previous post-mortem.

The inability to walk was no doubt due to contraction of the muscles and not to paralysis as at first appeared.

I sent a dead bird to a veterinary surgeon for examination. I did not send any details as to feeding or symptoms. He could find no disease present but diagnosed poisoning due to hydrochloric acid. Not being satisfied with his diagnosis I tried the following experiments:—

I put five pullets into separate pens.

No. 1 was fed with the contents of a dead bird's crop.

No. 2 had thirty minims of blood hypodermically injected, from a bird (died later) known to be suffering from poisoning.

No. 3 was fed on potatoes alone (the potatoes were obtained from his farm and were fed ad-lib).

No. 4 fed on sharps with an addition of salt ($\frac{1}{4}$ of a part of salt to every three parts of sharps). The salt was also obtained from his farm.

No. 5 was fed on potatoes and an addition of salt (same percentage as No. 4). For bird No. 5 the salt and potatoes were obtained from my own farm. All birds were fasted for twenty-four hours before the experiment started.

The following morning No. 5 was suffering from poisoning, there was a discharge from the nostrils and the bird drank water profusely. I made no attempt to administer an antidote, and the same night the bird died. P.M. examination showed the same internal appearance as before.

No. 1, 2, 3, and 4 looked quite healthy and feeding was continued. No. 1 and 2 were given sharps only. No. 3 and 4 were fed as before.

The following morning No. 1 showed slight symptoms of poisoning but later recovered without treatment.

No. 1, 2, 3 were let loose as they were no further use.

No. 4 was fed with its ration slightly altered—the salt being increased to $\frac{1}{2}$ a part in every three parts of sharps. This was very heavy feeding of salt, but was only done to see what effect it had. After five days feeding the bird refused to eat any more and as no signs of poisoning had been seen the bird was let loose.

The extra salt acted as a laxative.

The pigs kept perfectly healthy. The pigs obtained the same potatoes as were used for bird No. 3.

All birds which died were pullets, several hens were affected, while others never showed any signs of poisoning.

The dead bodies kept for several days without decomposition taking place, a sign that the poison had circulated throughout the system.

These experiments show that salt fed to young

fowls with potatoes, proves harmful, and if in any quantity will cause death. Particularly is this noticeable in young fowls.

Why it should not cause death when fed with sharps I am unable to say. We know that when common salt is treated with sulphuric acid we obtain sodium sulphate and hydrochloric acid—perhaps potatoes contain more sulphuric acid than other plant foods.

I have heard of common salt producing gastro-intestinal trouble in cattle and that ferrets cannot live if they eat it—but have never heard of it affecting poultry.

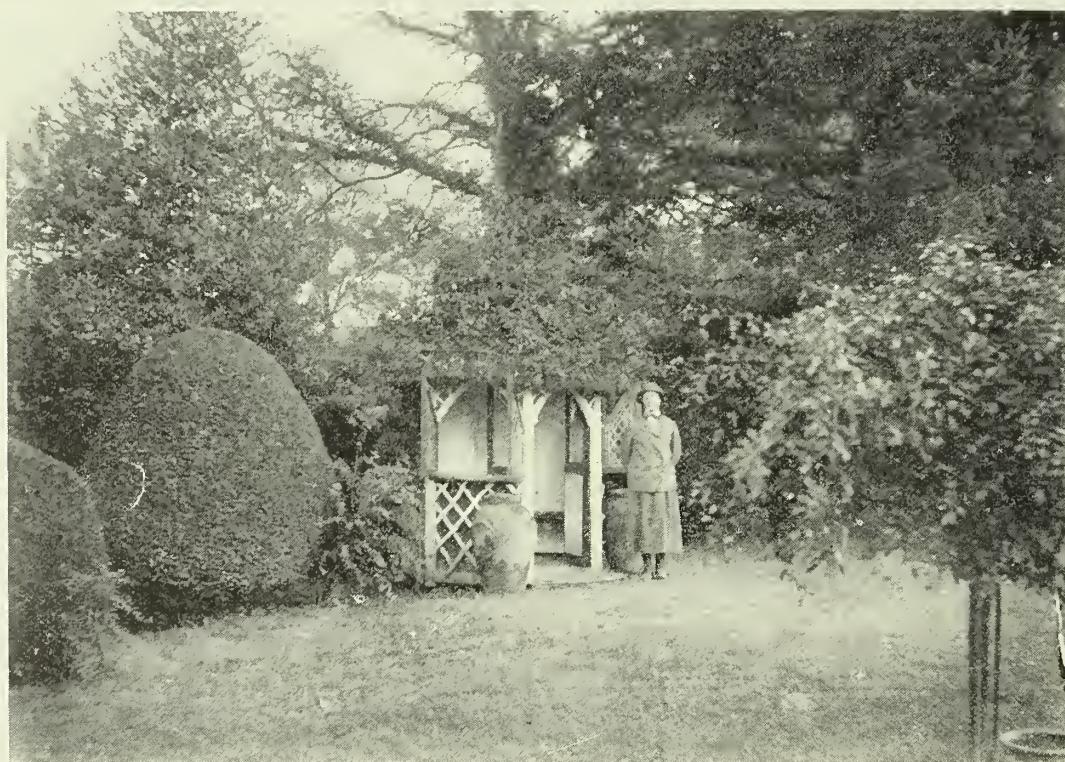
I think the foregoing will prove of interest to your readers and shall be glad to learn through the medium of the ILLUSTRATED POULTRY RECORD whether anyone else has had a similar experience.

GEORGE A. C. WYLLIE.

seen that are, perhaps, unique in the Dominion. One can drive for long distances in all directions, and see nothing but poultry farms, or here and there a small fruit farm. The majority of fowls kept are of the Mediterranean class, probably ninety per cent. being white Leghorns. This breed, owing to mildness of winter months, is most suited to the localities mentioned.

Average egg yields are very high, and would astonish poultry breeders in colder sections of the country. The birds in most localities near the Pacific are able to range at least eleven months in the year. This fact, and the up-to-date methods adopted, secure large egg yields and wonderful hatching records.

On Vancouver Island, especially in the Cowichan district, which is known as the "Petaluma of Canada," the conditions are very favourable indeed



Mrs. L. C. Prideaux at Home.

We reproduce several photographs in this issue of Mrs. Prideaux's Yokohamas, for which she is so deservedly famous.

POULTRY KEEPING IN BRITISH COLUMBIA.

Writing with reference to the mild climate and the favourable conditions in British Columbia, as offering a remarkable opportunity for egg production, Mr. J. R. Terry says:—

"In some sections of the province, especially on the Gulf Islands, Vancouver Island and the lower mainland coast sections, where small farms of from five to twenty-five acres are the rule, sights can be

for the successful pursuit of the business. Considerable numbers of retired prairie farmers settle here each year, and mostly all of the latter embark in the poultry business. Of course, not all are successful, but, owing to the favourable conditions abounding, there are less failures here than would be expected when inexperienced persons engage in a business that, as much as any other enterprise, needs intelligence, business ability and attention.

From eggs alone, a profit of nearly 12/- per bird has been recorded over cost of feed.

The open-front house is practically the only type of house used, and continuous houses are the rule generally.

From three or four hundred up to a thousand birds are housed in one house for laying purposes. Yards are provided on the most up-to-date ranches on both sides of the hen-houses. The north yard is used in summer, and south in winter and spring. The unused yards are ploughed, and sown to either wheat, oats, rape, barley, or kale.

In conclusion, as a proof of the beneficial effects of climatic conditions prevailing on Vancouver Island, for instance, it might be mentioned that at the recently-concluded egg-laying contest held there, the leading pen of white Leghorns averaged 188·5 eggs per bird in ten months, and a pen of buff Orpingtons averaged 179 eggs per bird. During the month of February, six birds laid 140 eggs in 28 days, and in the next month the same pen laid 164 eggs. During one week, seven days, this pen laid 41 eggs, out of a possible 42.

PREVENTION OF CHICKEN DISEASES.

By F. W. PARTON (The University, Leeds).

THERE are vast numbers of young birds that die every year from ailments that appear to be, from the number of chickens affected, incidental to chickenhood. There are also chicks affected by the same ailments that overcome the trouble with nothing more serious than a temporary check to their growth. This is probably due to certain chickens being constitutionally stronger than others. The vigour of the parent stock from which they are descended is important, as this trait is transmitted, and therefore helps the chickens to ward off many ailments. There are, however, many diseases that may be prevented, and many others from which the danger may be minimised, by careful and skilful treatment in their early days, since it is in the early stages that they are most susceptible. It is at the beginning of the hatching season that by a little forethought some of the dangers may be avoided. Probably the most common trouble of chickenhood is diarrhoea, and the causes of this are numerous. During a wet and changeable season chicks are much more liable to fall victims to this scourge. A sudden change in temperature will frequently derange the tender bowels of young chicks. When it is caused by the weather it is, of course, beyond the control of the owner, and the only preventive measure within his jurisdiction is to provide shelter, so that they are not completely at the mercy of the weather changes so common in this country. There are, however, many other causes of diarrhoea that are entirely in the hands of the rearer; bad methods of feeding, such as throwing the food among the

droppings, or feeding the birds in the same compartment in which they have slept, without airing or otherwise purifying the atmosphere; giving soft food badly mixed or too moist, is liable to disarrange the delicate stomach; or allowing the food to remain constantly within the chickens' reach until it becomes sour by long exposure, and dirty from being trodden on by their feet, which are often caked with excrement. All these might be avoided by more careful attention. The food should be mixed into a stiff paste, and removed as soon as the birds are satisfied; their quarters should be kept perfectly clean, and should any of the droppings adhere to the chickens' feet it should be removed before it forms into a hard mass, otherwise the birds may be permanently crippled.

Overshadowing in their sleeping place, and in their run, is mismanagement that has most fatal results. There is scarcely a known trouble among chickens but what is either caused, or fostered, by inattention to this matter. Over-crowding in the brooder or chicken house is at once apparent by the distressed appearance of the birds when liberated in the morning. It is at first perhaps more a general air of debility than any specific disease, which afterwards may assume a more serious aspect. This trouble often begins in a coop which is allowed to remain so long in one place that the hen is actually brooding them among a mass of excrement. This trouble is entirely obviated by a frequent removal of the coop on to fresh and pure ground. When the time arrives for the removal of the hen, in favourable weather, the chickens may remain in occupancy of the coop, which is sufficiently large to accommodate the number of chickens that have been brooded by one hen. The real danger, however, begins when the chickens are removed to a house. The reason for this is the occupants of a number of coops are all crowded into one house, and the accommodation may be ample for say, fifty chickens for the time being, but there comes a time when the air space is quite inadequate. There are many poultry-keepers who do not realise the fact that young birds must have their accommodation increased in proportion to the extent of their growth. The majority of poultry-keepers are aware of the evils of over-crowding yet they are guilty themselves of erring in the direction which they so strongly condemn in others. It is, however, no excuse that it is done in ignorance since the smell in the house after being closed all night is a certain indication as to whether too many are being housed in the available space. This danger may be avoided to a large extent by very severely "culling"—that is the removal of all faulty specimens. It is very strange what a rooted objection many

poultry-keepers have to killing or otherwise disposing of chickens that are a discredit to the flock, such birds should not be allowed to occupy space that should be distributed among the more perfect chickens.

Equally fatal to success is overcrowding on the ground. It is generally acknowledged by all who raise large numbers of chickens that the first and second batches do better than the third and fourth, and so on. Each successive lot, if put on the same ground as the earlier-hatched ones, do not grow so well, nor develop into the same promising stock. It is not, of course, in every case that the ground is absolutely impure—otherwise worse trouble than merely flagging chickens would be the result—but the freshness is gone from the land, and the only remedy is a rest. Prevention in this case is not altogether a difficult matter. If the space is unlimited where the chickens are reared, and each batch have an equal start, so far as fresh ground is concerned, nothing further is required, but when the amount of land is limited, an excellent plan is to divide it into sections. The number of sections and size of each should be determined by the extent of the operations, and a greater number should not be reared than each division will safely carry. This plan of having a number of small plots is undoubtedly better than having one large common run upon which each successive batch of chickens are run. This plan of division has a further advantage in that the chickens are kept in lots of the same age and size, when they are so kept their growth and well-being are much more pronounced.

IS THE PROBLEM SOLVED?

BY CARLTON HILL.

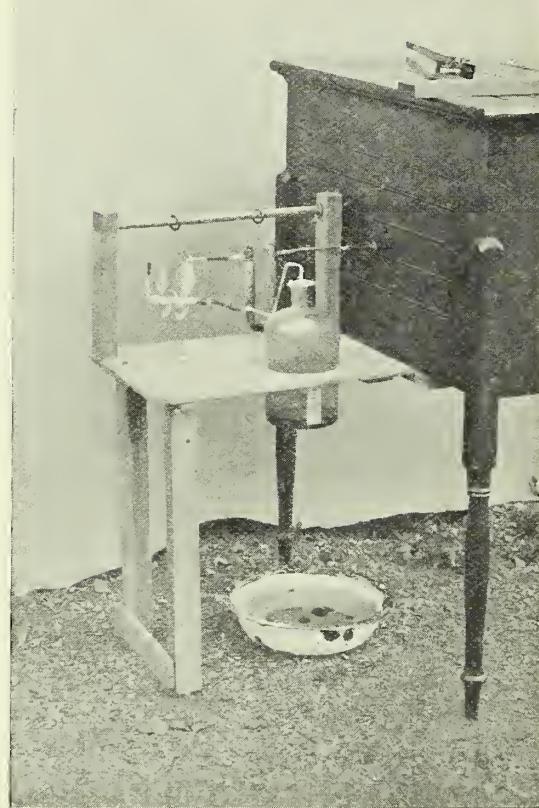
Being a description of an instrument invented to determine the amount of water vapour required by eggs undergoing the incubation process.

A considerable amount of space in the ILLUSTRATED POULTRY RECORD has been devoted in the past to the question of the influence of moisture in incubation. The object in constantly bringing this subject forward has been to impress upon readers the very great importance of this factor in hatching, and to endeavour to obtain their co-operation in solving the problem.

From time to time I have had particulars forwarded to me of many interesting tests and experiments that readers have made, but a number of them, although absorbingly interesting, have not been sufficiently advanced to be of general use, therefore they have not been made public.

In my own way I have tried to ascertain certain facts on incubation, but thus far my research work has not by any means been sufficient to make the results known.

Mr. Sweers contributed articles in the October and December issues of the ILLUSTRATED POULTRY RECORD giving particulars of his work in this direction. This experimenter has done great service to the poultry industry by his tests and trials along various lines. In the November issue I contributed an article on the same subject and to all three I refer my readers.



An intricate apparatus for the determination of the humidity of the atmosphere.

[Copyright.]

The influence of moisture in incubation can hardly be overestimated, since not only does it act upon the embryo during the hatching period, but it either makes or mars the livability of the birds that are finally hatched.

Although it is difficult to determine exactly what degree of humidity in the air in the egg chamber is required, so as to allow of a constant evaporation of the liquid portion of the egg, I maintain it is a fact to produce the best results every egg should lose the same amount of moisture in proportion to its original weight.

The main difficulty in the past has been to determine the rate at which the eggs have been losing weight. It is next to impossible to estimate this by the size of the air-space, since one is unable to correct the differences that appear in various shaped eggs and those in which the air-chamber is well over to the side. The only guide to this is the weight of the egg itself.

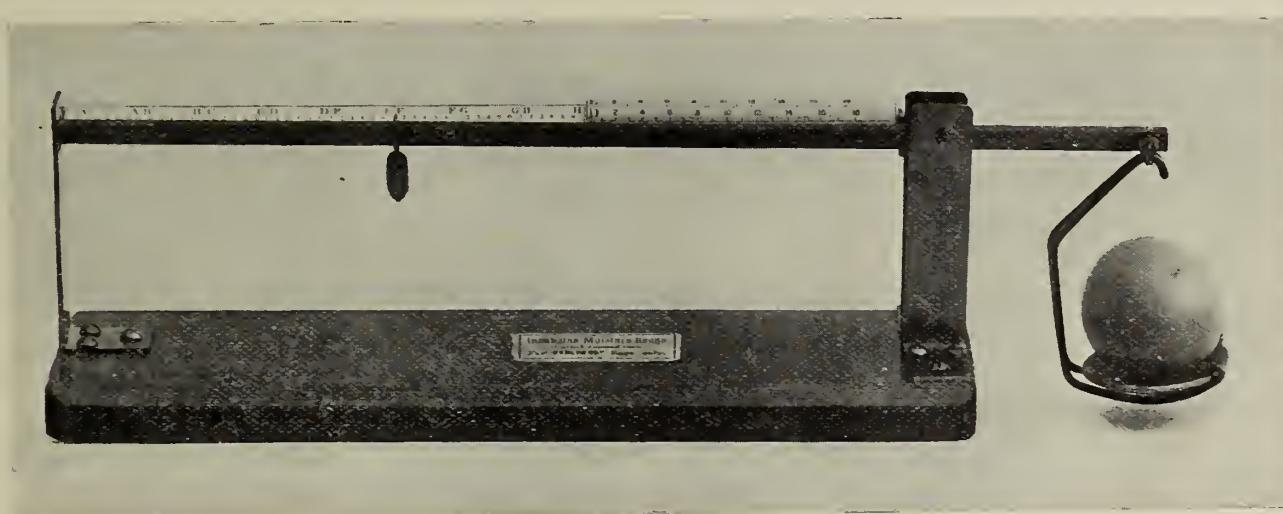
As has been pointed out in these columns before the two questions of moisture and ventilation go hand in hand. Air containing a high degree of humidity passing rapidly through the egg drawer will have the same effect as dry air passing slowly. Once be in a position to ascertain the rate at which the eggs should lose weight to produce the best results, then, by means of the ventilating apertures, one will be in a position to regulate the evaporation of the liquid part of the egg to a nicety.

ascertain the requisite degree of humidity for high percentage hatching. That certainly is the first thing to be determined.

I believe that a forward step has been taken in this direction by the introduction of what is termed the "Incubatus Moisture Gauge." The "I.M.G." is very simple to work, a test of 8 or 10 eggs taking but a minute, so that during the entire hatch only a few minutes are occupied by taking the necessary observations.

A description of this guage should prove of great interest, and if the results are a quarter as good as are claimed for it, it will certainly be an acquisition to the incubator operator.

The "I.M.G." is a highly sensitive balance of the steelyard type; there are no loose weights, merely one combined weight and pointer, which is moved along a beam about 10 inches long. Parallel and close to the beam is a fixed rod on which are marked graduated sections. When an



The Incubatus Moisture Gauge.

A picture was published in the December issue of an ordinary hygrometer, an apparatus by means of which the air humidity may be determined, but to obtain satisfactory information this must be worked in agitated air, a condition which can only be derived by the use of a small fan or similar instrument. As an experimental device it is excellent, but for practical purposes it is of little use.

An illustration is given this month of another apparatus that can be used successfully in experimental work, but the labour involved and the appliances and instruments necessary are so intricate that they prohibit its use by the practical operator. It is a combined arrangement for determining the amount of carbon dioxide and water vapour in air, and in this case it is fixed to a hot-air, non-moisture incubator.

Although useful for certain purposes the two apparatus mentioned above do not enable one to

egg is weighed on the "I.M.G." previous to incubation the sliding weight and pointer will come to rest opposite one of the graduations of the "weight" scale; this is the original weight and must be marked on the egg for future reference. Sliding over the "weight" scale is a loose tubular sleeve on which are marked the "day" scales. To provide for all eggs of reasonable weight the "weight" scale is divided into 8 sections, lettered A to H, and there are 8 "day" scales to correspond; the tubular sleeve is simply revolved to bring the correct scale in line with the pointer.

When it is desired to test an egg on any day up to the 18th day of incubation (any further interference is undesirable) it is placed on the egg pan and the weight moved along the beam until a balance is obtained. Then the tubular sleeve is pushed up until the end of it is level with that graduation of the "weight" scale

which is marked on the egg. The pointer will now be opposite one of the graduations of the "day" scale. If the egg is tested, say, on the 10th day, and the moisture has evaporated at the normal rate, then the pointer will be opposite that graduation marked 10; should a higher number be indicated then evaporation is too rapid and must be checked; if a lower number then evaporation must be hastened.

In practice it is recommended that 8 or 10 eggs be selected from each batch, and the results averaged, as the most carefully chosen shells will vary slightly in porosity. A fair number of test eggs are required at the start of the hatch in order to allow for unfertiles and weak germs.

As a general rule it is sufficient to test only two or three times during the hatch.

In order that all eggs may be subjected to the same conditions in the incubator, especially as regards air currents, their positions in the tray must be constantly changed. This refers in a special degree to the test eggs, which also should not be kept together in a group, but be well distributed.

Incubation ventilation must depend on the construction of the machine, but all makes can be governed more or less directly. As a rough guide it may be suggested that:—

To retard evaporation: (a) Reduce the size of the ventilation aperture; (b) Place additional felts in the bottom of the machine to check diffusion of air; (c) Plug some of the ventilation holes lightly with cotton wool, or (d) Fill the water tray with warm water instead of with cold; (e) In the case of a non-moisture machine place a saucer of water with a small sponge under the egg tray.

To accelerate evaporation: (a) Open ventilators; (b) Remove felts or any check to diffusion of air; (c) Remove water tray during day-time, replacing at night, or as may be found necessary.

Act promptly but not violently, combining some of above methods rather than carrying any one of them to an extreme.

The introduction of this appliance should be welcome because although it may not solve the whole difficulty of the moisture question, it will at any rate be a good guide. It appears to me that the principle is a good one and that it should be of great service to incubator users.

There are two points, however, about which I am not certain as to the exactitude of its working. These may only be small factors but I cannot tell what influence they may exert in actual operation. Quite apart from the question as to the correctness of the graduations on the "weight" scale and the "day" scale, for which

at this date one must take the maker's statement, these are the shell thickness and the age of the egg.

The porosity of the shell is an important factor regulating the evaporation of the liquid portion of the egg, but I believe that I am correct in saying that this does not vary very much under normal conditions. It is true, however, that brown shelled eggs are rather stouter than white shelled eggs, but whether this affects the porosity is a fact that, as far as I know, has not yet been determined. Exactly what effect this difference would have is very difficult to ascertain without numerous tests.

The ideal, I know, is to have all eggs destined for hatching placed in the incubators before they are a week old, but this is not always possible particularly in the early part of the season. Kept in a temperature of 50°F. an egg will lose the following:—Out of 120 eggs 1 egg contents is lost in the first 6 days, 2 egg contents in 13 days, 3 in 21 days, 5 in 36 days and 7 in 60 days. Eggs that have been stored for three weeks will have already lost 2.5 per cent. of their original weight. A point, therefore, to be determined is whether eggs lose a proportionate amount of their original weight or of their weight when placed in the incubator. Again I must confess I do not know to what extent this would influence the correctness of the working of the "I.M.G."

This gauge appears to me, however, to be a very valuable contribution to the apparatus already at our disposal, and, if it is as successful in results as I believe it to be, it will be a boon to all poultry-keepers who use the artificial method of hatching.

To the Illustrated Poultry Record.

Dear Sir,

I have read the articles on moisture in connection with incubation in the October, November, and December issues of your highly interesting paper with much interest. It seems to me, however, that Herr Sweers has plunged into unnecessary confusion in his endeavours to solve the moisture problem. He seems to have given no attention to the egg itself. He states "the more the eggs have lost in weight, i.e., have dried, the more unfavourable for the yield of chickens." Does this mean that the utmost amount of moisture possible should be conserved *inside* the egg? The fallacy of this is obvious, but in view of other statements of his it would certainly seem that in all his hatches the evaporation from the eggs was insufficient. He lays very great stress on the necessity of providing dry air in the incubator at the conclusion of a hatch, and states very definitely that all deaths in shell occurring during the last two days are due to apoplexy which is caused by over damp air. How then is it possible to reconcile this assertion with the fact that, amongst English and American incubatists, it is a very common and even almost universal practice

to damp the eggs by means of spray or wetted flannel and so to increase the moisture at hatching to a point much above normal? According to Herr Sweers this increase in humidity should exercise very serious results on the success of the hatch, but it can hardly be supposed that such ill effects would have passed unnoticed, especially in the United States where incubation is practised on such an enormous scale, and where new ideas meet such ready acceptance. There would seem to be a simple explanation both of the need for dry air and of the need for moist air. If Herr Sweers overdoes moisture in the early stage of his hatches then it is clear that his only chance of correcting this fault is to encourage drying out at the last moment. In his letter he says that "between the 18th and 20th days the moisture increases in an extraordinary manner in the egg drawer." This is easily accounted for by the fact that more moisture is driven off from the eggs at this period than earlier in the hatch, due, we may safely say, to the strong life inside the egg. This increase, by the way, commences on the 12th or 13th day of incubation and increases gradually towards the end of the hatch. (This statement is based on statistics compiled from eggs hatched under hens). Therefore it would seem that unless nature is wrong in supplying greater humidity in the immediate surroundings of the eggs at the end of the hatch, then Herr Sweers' theory as to the necessity for dryer air must be entirely at fault.

To quote from Herr Sweers' article again—"The air in the incubation room must not be damper than the air over the eggs, otherwise there is no ventilation." Now, how does humidity affect ventilation? Here again is strong evidence that Herr Sweers has been working on wrong lines. If, instead of the word 'ventilation' we read 'evaporation,' then the point becomes clear at once. The whole object of ventilation is, practically, to secure sufficient evaporation, but if the air in the incubator room is already saturated then the amount of extra moisture which it can take up in the incubator depends upon its temperature before entering the incubator. From this it is clear that a distinctly moderate temperature in the incubator room allows most effective control over ventilation and evaporation, humidity in the atmosphere may be disregarded entirely.

As regards what Herr Sweers calls a confirmation of his experiments, it may be pointed out that as his practice seems to be to run his incubators with excessive moisture then the only result of the damp weather was to spoil the chance of the final hurried drying out taking place. And after he had managed to secure chicks from his second apparatus they nearly all died; is it reasonable to suppose that faulty moisture conditions had weakened them?

Herr Sweers labours this idea of the necessity of dry air at conclusion of hatch, but in view of what he says in the first quotation I have made then the weakness of his case must be apparent. From the concluding paragraph of his article in the October number it would appear that German incubator management in general favours excessive moisture in early stages, relying on vastly increased ventilation at the end to correct matters, a curious reversal of American practice.

As regards the remarks on Herr Sweers article which appear in the November issue I would comment only on one point. Provided that the simple form of hygrometer called for is obtainable, then how are the readings to bear any definite relation to the amount of moisture evaporated from the eggs? Consider first what moisture is introduced by ventilation, then what moisture is carried off, and then the rate at which all this takes place. I think it is obvious that a hygrometer in an incubator is quite useless.

Going on to the letter in the December issue I will answer the two important questions put by Herr Sweers in very few words. To both I say—the moisture in the

air or in the apparatus is not the point, what must receive attention is the amount of moisture in the egg itself: control the rate of evaporation by reference to that and the moisture in the air may be left to look after itself.—Do I understand that Herr Sweers uses a wet thermometer inside the incubator? then how far does this bowl of water further complicate matters by its inevitable evaporation?

Now, to turn from all these complicated proceedings to the "I.M.G." system, there is one argument which may be urged against it which I will deal with at once. It may be said that the "I.M.G." does not indicate faulty evaporation until the mistake is made. This is quite true, but if the system is considered as a whole it will be seen that this is no objection. The amount of error which may be due to faulty evaporation is very considerable, loss of moisture may proceed at double the normal rate or be only half what it should. Then if the first test is made at three days it is obvious that excessive or insufficient evaporation will be clearly apparent, the "I.M.G." showing the average loss for six or one and a half days respectively. This is an extreme and unlikely case, but even allowing it possible there is no harm done if prompt measures are taken to correct same.

An egg of a certain weight will lose 100 grains of moisture in 18 days if evaporated according to the experience of the introducer of this system, so that the daily loss averages about $5\frac{1}{2}$ grains. It may be asked what variation from the normal loss (as fixed) is allowable. There can be no very definite answer to this question, the normal loss was fixed at a point which was considered safest for the chick. The amount of evaporation which has been found to limit the possible exit of the chick (though not the full development) may be roughly stated as 60 grains and under, and 200 grains and over, the number of dead in shell increase rapidly as they near these limits. Of course, the strength of the chick and the actual surrounding moisture conditions have some effect, a very moist atmosphere for dried out chicks and vice versa make a difference in the number hatched. The actual cause of the fully developed chick failing to get out of the shell may be put down as partly physical weakness due to faulty moisture conditions inside the egg, and partly to the gluing up of the dried up chick and the inability of the insufficiently dried chick to get to work properly. Judging by the invariable weakness of chicks hatched under faulty moisture conditions the first cause would seem to be by far the greater.

If then, 100 grains is the normal loss, one would say that a loss of from 90 grains to 110 grains represent perfect moisture conditions while another 10 grains either way would not be the cause of many dead in shell, if any. Therefore, while a large error may be discoverable in three or four days, this, if corrected, will not be harmful as a little water more or less at early stages cannot effect the embryo. The value of the indication of error at three days is plain when it is remembered that the error will, if unchecked, be multiplied by six or seven by the conclusion of the hatch.

Uniformity of shell is of great importance in all hatching operations, even a hen can do nothing with a shell that is too thin or too thick. A free supply of grit and oyster shell should always be given, a bad shell will be a rarity then, but if hens have to find their own shell material then it is almost impossible to tell, from external appearances, whether it is fit for incubation.

I must apologise for the length of this letter, but the subject of moisture has never been properly thrashed out and a comparison of Herr Sweers scientific methods and results with my own experiments which have been based on nature itself, is interesting.

Yours faithfully,
ARTHUR H. PIEJUS.

THOUGHTS ON THE EGG QUESTION

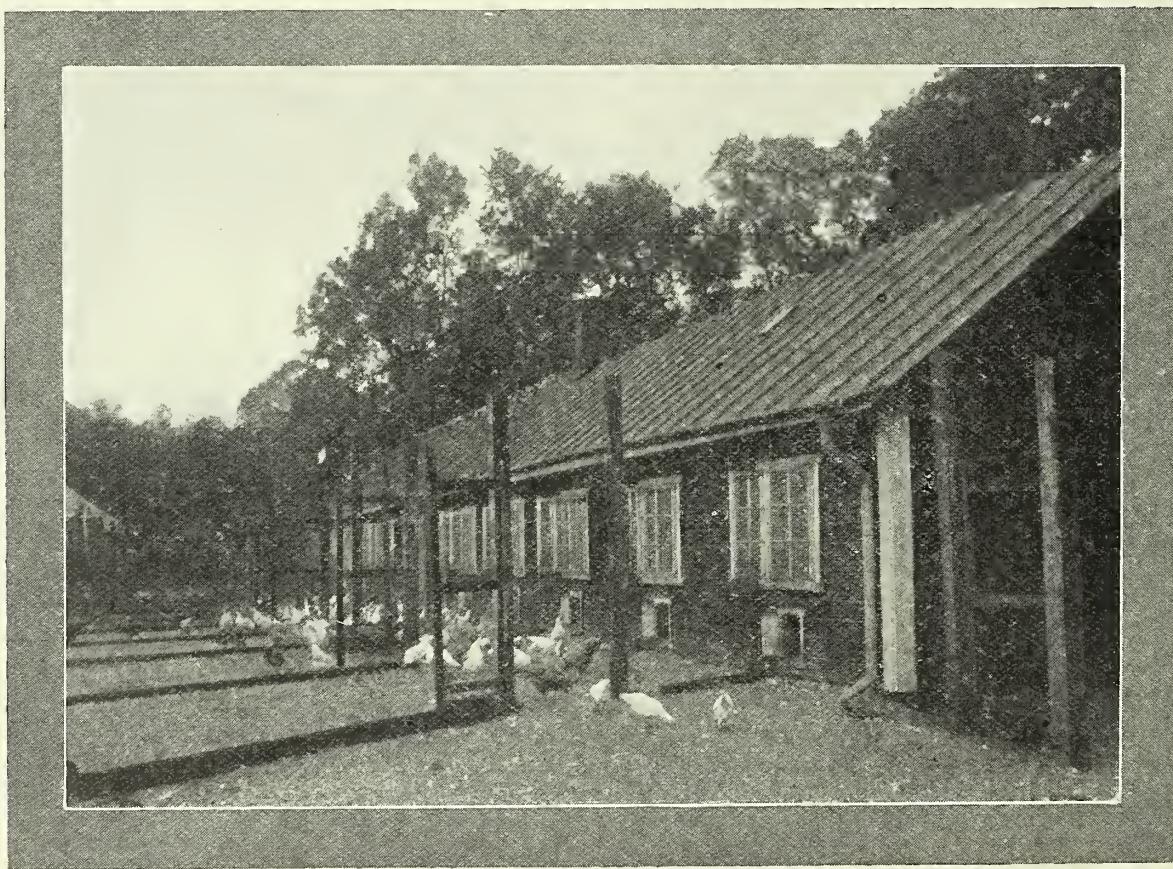
Notes from British Columbia.

By A. T. JOHNSON.

WHEN I was in the Far West last May the best eggs on the retail markets over there were thirty-five to forty cents ($1/6$ to $1/10$) a dozen, and they were not likely to get any cheaper. The term "best" I use merely in a comparative sense, not by way of inferring that these eggs are always above suspicion. Indeed, though I am not a very nervous individual, I never tap the shell of one of these "best," or even "strictly fresh," articles without experiencing an involuntary recoil of the senses.

and Bavaria, but it is so. The primeval forest may have been partially thinned of its timber in some regions adjacent to railways and towns, but the wreckage of stumps which the logger leaves behind him still confronts the progress of the agriculturist.

One of the chief factors in maintaining the high price of eggs on the Pacific coast at this, the cheapest, season is undoubtedly cold storage. The big plants all over the country, including many of the States, are now swallowing up all reliable



Continuous Laying House on a large Swedish poultry farm.

[Copyright.]

To take into consideration the high prices first, there are many reasons why eggs are more expensive in British Columbia than they are at home. Foodstuffs are a stiff price, freightage is costly, distances from ranch to market are enormous. As most of the country districts, with the exception of the "dry belt," are still under forest, or the ruins of burnt or fallen trees; cleared areas are small, few and very costly. Fowls are therefore nearly always kept in very limited runs, where every ounce of food must be supplied by hand. This may seem strange when we realise that British Columbia is rather more than the combined area of France, Prussia,

supplies they can lay hold of, and the question arises whether the principle is a commendable one or just the reverse. From a producer's point of view cold storage rather helps than otherwise—always provided that the eggs when they come out of the refrigerating houses are sold for what they are. This appeared to be a general opinion in the North-Western States when I was over there a year or two ago. Poultry-keepers were generally agreed that cold storage evened-up the market. If it somewhat reduced the price of eggs during seasons of lean production, it increased it in days of plenty. And, after all, it is during the flush of the season

that the big returns are made by the producers, and not so much when eggs are, in English money, half-a-crown a dozen. Then, again, the principle consumers of eggs—the cafés and hotels—will tell you that they really prefer cold storage eggs to those which are represented as “Strictly Fresh,” or “Finest Selected Ranch” because they are more reliable in quality and supply. This is especially so during the hotter months of the year (July to October) when a large percentage of the so-called fresh eggs get partially decomposed before they reach the consumers. Doubtless that would not be so were they shipped in proper condition. But want of organisation in collecting, the expense of sending small consignments, the long distances and carelessness in management, all tend to deterioration. The eggs, even if taken from the nest in a fresh condition, are often held back for one reason or another, so that by the time they reach the market two-thirds of them are anything but “Strictly Fresh.” Hence the preference shown for “Aprils” (*i.e.*, cold storage supplies) during the months I have named.

There has been a good deal of nonsense written and spoken upon the quality of cold-storage eggs, the backers up of the system affirming that they are equal to “new-laid,” and so on. But, though I have experimented with them in America, Canada, and some parts of Europe—not to mention Britain—I have yet to be convinced that they are anything like approaching the genuine fresh article. Nevertheless, I am still of the opinion that the cold storage principle does undoubtedly help the egg-producer. It levels prices, and, if it were more generally adopted in England, the consumer would have a tolerably good egg in autumn and winter at a reasonable price—an egg which would be good for a variety of purposes and whose presence on the market would never be one of competition with the really new-laid. Indeed, I think that we may take it as an unquestionable fact that the breakfast egg of unimpeachable quality can always hold its own at any price and against all comers. But it must be beyond suspicion.

Go where one will the same old difficulty of obtaining a fresh egg is ever present, and so we have to put up with inferior substitutes, of infinite degrees of badness, instead. Cold storage and a score of other specific have been invented with the object of preserving its pristine quality, but all have signally failed. They have, it is true, done something for it—and for us. But cold storage is even less effective in egg preservation than it is in the case of meat, fruit or vegetables, so far as the maintenance of quality is concerned. Notwithstanding, it has its good side, and, for reasons I have already given, there is but little doubt but that it would, in the absence of any better method of preservation, do much for home poultry-keepers and the public generally. But with it would have to come some effective system of collection and co-operation, or a more comprehensive application of that already in existence in some parts of England, or it would avail but little.

When one considers the fact that eggs and dead poultry can be collected and shipped in refrigerator cars two or three thousand miles across the American Continent, to supply the needs of the Western markets, surely, in a country like England, where freightage, labour, living, everything is cheaper, the country people ought to reach the big markets at a more reasonable rate than at present, and under conditions designed for the better dispatch of the produce. Though the railways of America are the railways of an ostensibly democratic country, let no one run away with the idea that they are democratic in actual practice. Americans themselves will tell you that they are just the reverse—powerful trusts operated by autocratic millionaires who are not often given credit for studying other than their own interests. I am not finding fault with our home railways, nor would I be understood to contend that those of America or Canada are in any general sense superior to our own. But I do find fault with the people of any country who do not club together for the common weal. Until English poultry-keepers, gardeners and farmers show the railway companies that they are ready to give them some definite, regular freightage, week by week, between given points, they cannot expect the companies to move in the matter.

As an instance of what can be done by co-operation let me cite what was on foot in British Columbia when I was there. The few poultry associations which exist in that widely scattered area were confronted with a serious menace in the form of expensive food for their stock. The result was that they co-operated one with another, with the object of procuring direct from the prairie provinces (the grain-growing districts) truck-loads of wheat and other cereals. By so doing they will be able to obtain their food-stuffs at a more reasonable rate, and everybody—save the middleman who now saps their profit—will be better off.

Farmer's Institutes in Canada can get their dynamite (for stump-blasting, etc.) at cost price from the Government. Fruit-growers can procure their sprays from the same source and with the same advantages. One poultry association in British Columbia save (through co-operation) 7/6 a roll on wire netting over local prices; 30/- to £2 per ton on hay “to feed the horses which haul the eggs to market”; £2 10s. to £4 per ton on fertilisers to raise green food. And, by clubbing together, both lumber for houses and oil for incubators and brooders are obtained by members of this association direct from the main supply.

But it would be idle to dwell further upon the advantages which would accrue from co-operation in rural England. The subject has been dinned into people's ears for long enough, and it is for them to act. It is for them to bestir themselves with the object of securing more Government support than the meagre pittance now doled out to them. That individual and voluntary effort, charitable bequests and “the hat” should be the main agents in furthering the English poultry industry along the right lines is enough to make

one blush for his country. The question of agricultural support in any nation—most of all in Britain—is one for the State, and it is abasing to have to swallow the fact that one Agricultural University in America (Cornell) has more poultry instructors than the whole of England and Wales put together. Or, to put it in another way, Canada's population is only about equal to that of London, and is scattered thinly over an area nearly as large as the whole of Europe, yet she can afford every one of her agriculturists instruction, sympathy and encouragement of a practical nature.

A few years ago it was supposed that Canada would join hand with other countries and become an exporter of eggs and poultry into Great Britain. But the scheme now is as dead as mutton, for the Dominion has not nearly enough to supply the needs of her own rapidly increasing population. China, the United States, Russia, and the Antipodes are all now serving the Canadian demand not only for poultry supplies but for various other foods. And, to such an extent are her requirements increasing, it may mean that the United Kingdom's imported supplies will be threatened by a serious deficiency in the near future. This would doubtless be advantageous rather than otherwise to the British producer, however much certain branches of trade, which rely upon a cheap egg supply might suffer. That, however, does not immediately concern the Dominion. She recognises the fact that she is paying millions of dollars every year for supplies which might be produced within her own boundaries. And her government, full of the recognition of the fact, is, as I have already said, giving producers every possible assistance—and, incidentally, affording the "Mother of Parliaments" a salutary lesson in matters maternal and sound statesmanship.

Value of Infertile Eggs.

In a report issued by the Bureau of Animal Industry of the United States we find the following : "Infertile eggs, regardless of where they may be kept, are much more resistant to deterioration than fertile. Two-thirds of the total loss in fertile and infertile eggs takes place on the farm. The basic factors for this condition are the haphazard methods of poultry management on the farm. If eggs are fresh when delivered to the buyer it is impossible, with the present methods of transportation, for them to reach the packing house without showing a slight deterioration in quality. The data to hand would indicate that this loss is about 12 per cent. of the original value of the eggs. The results of all the experimental work point to the fact that the production of the infertile egg is the greatest asset in the attempt to produce high-quality market eggs during hot weather."

POULTRY COOKERY.

SEASONABLE ENTREES.

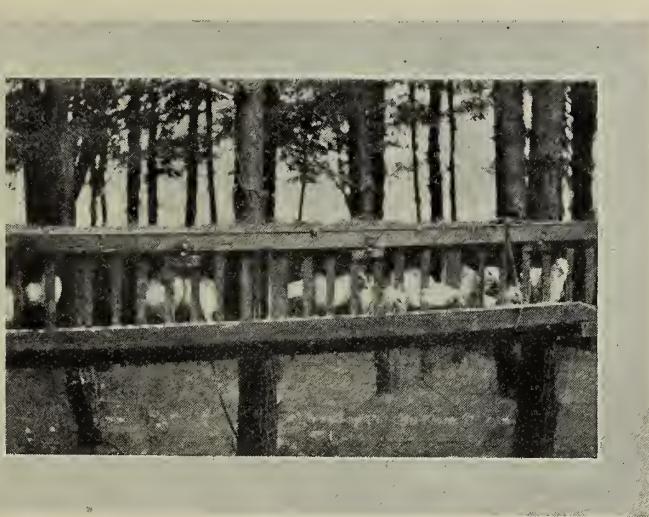
STEWED FOWL WITH MUSHROOMS: Divide a good sized bird into joints, or half joints and slices and, after seasoning these pleasantly with salt, pepper and lemon juice, fry them in a stewpan in which has been melted four ounces of fresh butter or clarified fat, turning the pieces over so as to brown them lightly and evenly. When this point has been reached, add two tablespoonfuls of roughly chopped onion and a bunch of savoury herbs, cover closely and stew gently for twenty minutes, or longer if necessary; then, when done enough, drain the fowl very carefully from the fat and arrange it neatly on a hot dish. Mix a tablespoonful of flour to a smooth thin paste with cold water and stir this into the contents of the stewpan, after which add sufficient stock to make a sauce the consistency of thick cream; stir constantly until boiling point has been reached, add a few drops of browning if required, and strain the sauce over the fowl. Garnish round about with a plentiful supply of skilfully stewed mushrooms, and send to table very hot.

FOWL A LA BECHAONEL: This is a most dainty and appetising dish; also a very convenient and economical one as it is made from the remains of cooked fowls, either roast or boiled. Mince together, very finely, half a pound of the fowl and four ounces of boiled ham and, after seasoning the meat pleasantly, stir it into three quarters of a pint of smooth creamy bechamel sauce; continue stirring with a small wooden spoon until the mixture is thoroughly hot, then dish it up in the centre of a well-browned potato border and cover the top with skilfully poached eggs which have been trimmed very neatly round the edges and lightly sprinkled with finely minced hot parsley; garnish round the base with small baked tomatoes and sprigs of crisp parsley, arranged alternately, and served as quickly as possible.

GOOSE IN BATTER: When only a very small portion of goose remains the following receipe will prove an excellent one. Strip all the flesh from the bones and cut it into small neat pieces about an inch long, half an inch wide and a quarter of an inch thick, then sprinkle these lightly with salt, pepper and finely powdered sage, and set them in a cool place till required. Make some light, well-mixed batter with four tablespoonfuls of flour, half a teaspoonful of salt, two or three well-beaten fresh eggs and a small quantity of milk, and when quite free from lumps pour a little of it at the bottom of a greased pie dish; next arrange a layer of the goose, distributing the pieces as evenly as possible; then add more batter, and so on until the dish is sufficiently full, letting batter form the topmost layer. Bake in a well-heated oven from half an hour to an hour, according to the size of the dish. It may either be served in the dish in which it has been cooked, or it may be turned out carefully on

to a flat dish and garnished with a little hot, crisply-fried parsley. In either case, serve as quickly as possible as, if kept waiting the batter is apt to lose its delicious lightness.

RAGOUT OF DUCK: Prepare in the usual way, one large or two small birds and roast them until about half cooked, then cut them up neatly, taking the flesh from the breasts in long slices and dividing the joints, if large, and cover over until required. Chop two or three medium sized onions rather fine and fry them in a small quantity of fat until soft and yellow; then dredge in about a tablespoonful of flour and stir until nicely browned but not in the least degree burnt. Now add half a pint of good brown stock, a seasoning of salt, pepper and powdered sage, a teaspoonful of tarragon vinegar and a glass of white wine, and bring to boiling point, then add the prepared duck and simmer gently and steadily until the meat is sufficiently cooked. Have ready, on a hot dish, a neatly arranged border of skilfully boiled rice or creamed potatoes and dish up the ragout in the centre.



Fattening chicken for the Spring markets.

Garnish round about with small baked tomatoes and sprigs of parsley, and serve very hot.

TURKEY A LA MAITRE D' HOTEL: Choose for this dish a small, but very plump young bird, and after par-boiling it in the usual manner cut it up into joints, or half joints, and fillets, using a very sharp, fine pointed knife for the purpose, so as not to jag or tear the flesh; season pleasantly, then place the joints, etc., in a well-buttered baking tin, cover with oiled or greased white paper, and bake in a moderate oven until the cooking is satisfactorily finished. When done enough, pile up neatly in the centre of a hot dish, pour over some well made maître d' hotel sauce, garnish round about a close border of small richly browned potato croquettes interspersed with sprigs of parsley, and send to table at once accompanied by more sauce in a sauce boat.

CAPON A LA ROMAINE: Choose a suitable bird, prepare it carefully, and cut it up into small joints and fillets; soak these in fine salad oil for twenty minutes, then drain well, season lightly with salt, pepper, lemon juice, and mixed herb powder and fry in a stewpan containing a small quantity of boiling butter until nicely browned all over, after which add half a pint of good brown sauce, half a pound of fresh tomato pulp—obtained by rubbing fresh tomatoes through a fine wire sieve—one tablespoonful of finely-minced par-boiled onion, four tablespoonfuls of carefully prepared chopped mushrooms, the strained juice of a small fresh lemon, and a little more seasoning if required, and simmer gently from fifteen to twenty minutes. When ready, dish up the meat in a neat pile on a hot dish and pour the sauce over; garnish round about first with a rather high border of skilfully-cooked pleasantly-flavoured macaroni, then with a lower border of carefully-cooked, well-drained French beans or green peas, and served the whole very hot. If arranged tastefully, this is an exceedingly dainty dish both as regards flavour and appearance, the three colours forming a most-pleasing contrast.

A Biological Problem.

In a lecture on the Biology of Poultry Keeping, given at Columbia University, in a course of "Lectures on Economic Agriculture," Dr. Raymond Pearl of Orono, Maine, concluded his remarks as follows:—

"In conclusion it may be said that while the poultry business is not a gold mine, nor a get-rich-quick scheme, it is a legitimate business. When properly conducted it will pay liberal interest on the investment of capital and labour. The keynote to success in it is to begin in a very modest way, and only enlarge the plant, if it be enlarged at all, as the fundamental principles of breeding and management are thoroughly mastered. Chickens are not machines. They are living creatures. A poultry plant is not a factory. It partakes much more of the nature of a girl's boarding school, with a strong leaning on the part of its inhabitants towards suffragette doctrines. Poultry management is a biological problem, and to be successful must have due regard to fundamental biological principles."

This appears to us to be the only sensible way of dealing with the poultry industry, and we wish other instructors and investigators would follow the same line by emphasising the limitations as well as the possibilities of utility poultry keeping.

Butter-milk for Fattening.

In a bulletin issued by the Missouri State Board of Agriculture, reporting experiments in fattening, it is recorded that "birds fed on (Indian) corn, meal, and butter-milk and kept in a fattening crate gained in weight three times as much as birds fed on (Indian) corn meal alone, and this gain was made at a cost of 3½d. (7 cents) for each pound gained, whilst the cost of the gains of the birds fed on whole grain ranged from 30 to 60 cents (1s. 3d. to 2s. 6d.) for each pound gained."

GROWTH OF CHICKENS AND GROWING TESTS.



REFERRING to the editorial notes in the January issue of the I.P.R. respecting the growth of table chickens, it is much to be regretted that there are no farms or stations in this country, as there are in the Colonies and U.S.A., where experiments are made under proper supervision to ascertain the cost of rearing chickens for table purposes so that authentic data can be obtained as to which are the best breeds of fowls for quick maturity, quantity of edible meal and cost of production. Poultry-keepers have to fall back on the result of private individuals for statistics which is the reverse of satisfactory.

The following particulars, however, will doubtless be of interest to the many readers of the I.P.R., as they give a *resume* of various tests that have been carried out and may act as a guide as to what can be done in chicken rearing during the present season.

The earliest statistics are the result of experiments conducted at the late College Poultry Farm at Theale.

A. There were four separate trials, with lots of 30 chickens each: White Wyandottes, Faverolles, Buff Orpingtons, and Cross Breeds, the last mentioned consisting of 15 Houdan-Buff Orpington, and 15 Indian Game-Buff Orpington.

For the purpose of comparison, we will take the cross breeds; the 30 chickens at 13 weeks old weighed 1lb. 13oz.; the average quantity of food consumed was 6lbs., the average cost being 5 $\frac{3}{4}$ d. per head.

These birds were normally fed, that is not with any intention of forcing for the table. The experiments were made in 1904.

B. FARNE ISLAND EXPERIMENT.

The trial made by Mr. F. G. Paynter to ascertain the cost of rearing table fowls. 41 birds were used; they were Plymouth Rocks, Leghorns, etc.

The average weight of the 41 chickens was 3lb. 8oz. at 13 weeks, and the average quantity of food eaten per bird was 12lb., and the average cost of food consumed was 8 $\frac{3}{4}$ d. per head. The experiment started on July 2nd, and finished in October, 1906.

C. Three trials were made at the Harper-Adams College in the autumn of 1910 and the spring of 1911 and 1912.

1. Autumn Results, 1910.

Average weight of chicken 18 weeks old ..	3lb. 12 $\frac{1}{2}$ oz.
" " food consumed per chick ..	14lb. 9oz.
" " cost of grain and meal	1s. 7d.

2. Spring, 1911.

Average weight of chicken 15 weeks old ..	2lb. 11 $\frac{1}{2}$ oz.
" " food consumed per chick ..	7lb. 11.7oz.
" " cost of grain and meal	8.7d.

3. Spring, 1912.

Average weight of 50 chicks at 14 weeks ..	3lb. 8oz.
" " food consumed per chick ..	8lb.
" " cost of grain and meal	1s. 0d.

D. MR. J. H. GILBERT'S TRIAL.

This trial commenced on March 21st, and terminated on June 13th, 1910. It consisted of 12 chickens hatched at the same time. The breeds were taken haphazard from a batch of incubator hatched birds, each lot being placed with a hen in a coop in the open ground at the highest point in the park, quite apart from the other poultry. Each lot was treated in the same way the only difference being in the diet, namely dry *versus* soft food.

E. Test made by Mr. R. E. Widdows, at Crawley, Sussex. This consisted of 55 chickens, 2 of which died; the total cost of the food was 29/3, an average of 6.6d. per bird, and the average weight of the bird was 3lb. 3oz.

F. MISS GARRETT'S TRIAL.

In the spring of 1913 Miss Garrett made an experiment in chicken rearing to ascertain the difference in growth of various breeds of table poultry. On March 21st, 100 eggs were set in an incubator, of which 77 chicks hatched out on April 11th.

They comprised three pure breeds and 6 cross breeds. Of these 48 were placed in a foster mother, with the following result at the end of 12 weeks:

	No. Sex.	Av. weight at 12 weeks.	Breed.
<i>Pure.</i>	1. C.	3lb. 8oz.	Buff Orpington.
	2. P.	3lb. 8oz.	Rhode Island Red.
	3. P.	3lb. 2oz.	White Wyandotte.
<i>Cross.</i>	4. C.	3lb. 4oz.	Malines—Faverolles Orpington.
	5. C.	3lb. 4oz.	Indian Game—Buff Orpington.
	6. P.	3lb. 4oz.	Rhode Island Red—W. Orpington.
	7. C.	3lb. 4oz.	Black—Buff Orpington.
	8. C.	2lb. 12oz.	Faverolles—Sussex.
	9. C.	2lb. 12oz.	Rhode Island Red—W. Orpington.

Average weight of chickens, 3lb. 2oz.

Average weight of food consumed per bird, 8lb., costing 11d.

G. This trial was made by Mr. W. Welford, to ascertain the cost of rearing 12 White Orpington chickens from the shell to 12 weeks, these were hatched on May 12, 1913:

Average weight of 12 birds when hatched ..	0lb. 1 $\frac{1}{4}$ oz.
" " at 12 weeks ..	3 5
" " quantity of food consumed per bird ..	6 1 $\frac{1}{2}$
" " cost of food per bird	5 $\frac{3}{4}$ d.

H. MR. C. E. BIRKBY'S TRIAL, at Latchingdon, Essex.

13 Speckled Sussex chickens were hatched out on May 20, and at the end of 12 weeks the average weight was 2 lb. 10 oz., they had consumed 7lbs. of food at an average cost of 9d. per head.

J. MR. J. H. WEAVING'S TRIAL at Chipping Norton.

This trial was made with 12 Rose Comb Rhode Island Red chickens; they were incubator-hatched on the 3rd August, the result being 4 cockerels and 8 pullets, with the result that on October 25th, being exactly 12 weeks old, they weighed 39lb. 6oz. being an average of 3lb. 4½oz. The amount of food consumed was 53lb. 11oz., which with 4oz. of Grit, made the total cost 4/5, giving an average per bird of food consumed 4lb. 7½oz., and an average cost of 4½d. per bird.

To render a comparison more easy the above particulars are given in tabular form, and the figures are corrected to a uniform age of 12 weeks. We also append the relative cost per pound increase in weight. In this case we take 2 oz. as the original weight of each chicken when hatched.

COMPARATIVE EXPERIMENTS IN CHICKEN REARING TO TWELVE WEEKS OLD.

No. of Birds.	Av. weight of Chicken. lbs. ozs.	Av. quantity of Food. lbs. ozs.	Cost of Food. s. d.	Cost per lb Increase. s. d.
A.* 30	1 10	5 1	5.0	3.3
B. 41	3 1	10 8	7.44	2.5
C.1 16	1 8½	5 8¾	9.215	6.6
C.2 40	1 9.4	5 5.6	7.2	5.0
C.3 50	2 10	5 14	8.84	3.5
D.1 12	2 6	4 4	5.83	2.6
D.2 12	2 12	4 4½	6.38	2.4
E. 53	3 3	4 9	6.6	2.2
F. 48	3 2	8 0	11.0	3.7
G. 12	3 5	6 1½	8.75	2.7
H. 13	2 10	7 0	9.0	3.6
J. 12	3 4½	4 7½	4.5	1.45

*In this experiment no attempt was made to force the chickens as they were destined for egg production and not for table use.

DIRECT TRADING.

In these days of keen competition both in home and foreign poultry produce, it behoves the producer to take advantage of every opportunity that comes his way, not only so, but he must make opportunities, and not rest content with travelling the old road traversed by his forebears. To get a more regular supply of eggs throughout the year, with a much larger proportion in winter than is at present secured; to have chickens ready for market in the spring; to keep the right breeds respectively for each purpose; to house and feed them in the way that is most likely to secure these ends, are matters that are frequently dealt with in the columns of "THE ILLUSTRATED POULTRY RECORD." In those cases where the advice given has been adopted, better results have been attained, but there still remains the all-important question how to get into more direct communication with the consumer.

The excellent work done in past years by the National Poultry Organisation Society has been instrumental in doing an enormous amount of good, yet only the mere fringe of the marketing question has been touched. Systematic methods of collection, grading, testing, and disposing of eggs in bulk has been the direction in which most energy has been devoted, but a side of the question that has received practically no attention is that of securing private customers. The reason for this is doubtless because private customers can only be secured by individual effort.

The middleman has been very greatly abused, and in some cases deservedly so, but in others a very necessary link between producer and consumer has had to bear the brunt of adverse criticism. In certain districts, and in certain circumstances, were the middleman's services not accepted the disposal of eggs would indeed be a difficulty. At the same time, when circumstances will allow, there is no method of disposing of poultry produce so lucrative as that of getting into direct touch with the consumer, and every means should be made use of for building up such a connection. Poultry-keepers who live near to pleasure resorts are exceptionally well placed in this direction. Such a trade, however, is usually confined to the season, which is only of three, or at the very most, four months duration, though the demand is huge for both private and collective produce, although it is at a time of year when prices for both eggs and chickens do not range high, since it is a period when both commodities are plentiful. Better placed is the man who can, by the excellence of his produce, draw his customers from a large residential district, when the demand is constant throughout the year, and it is possible for the producer to make his own arrangements with the consumer instead of through the intermediary of a third person who takes the greater share of the profit. This not only tends to the securing of better prices, but it has the further effect of acting as an incentive to poultry-keepers to sell better produce. If he is acting directly with the consumer his own reputation is at stake, and very naturally he is anxious to uphold it; whereas if the produce reaches the consumer through a third party it is often a matter of indifference whether the eggs are, as Mr. Edward Brown says in a letter to the *Times*, "new-laid" three to five days old, "breakfast" practically similar, except that they are a few days older, and are better for poaching than for boiling; "fresh" not preserved, good for cooking; "cooking" of varied quality and often doubtful value.

It is inadvisable for the British poultry keepers to cater for any but the best quality in eggs and table chickens, even if prices, at first, are not of the highest. Establish a reputation for the quality of the produce, and once having obtained it, no effort should be neglected to maintain it. It should be remembered that if the produce is really good it will create a demand.

TABLE OF PRICES REALISED FOR HOME, COLONIAL, AND FOREIGN POULTRY,
GAME, AND EGGS FOR THE FOUR WEEKS ENDING JANUARY 17th, 1914.

ENGLISH POULTRY—LONDON MARKETS.

DESCRIPTION.	ENGLISH POULTRY—LONDON MARKETS.				FOREIGN POULTRY—LONDON MARKETS.			
	1st Week. Each	2nd Week. Each.	3rd Week. Each.	4th Week. Each.	COUNTRIES OF ORIGIN.	CHICKENS. Each.	DUCKS. Each.	DUCKLINGS. Each.
Surrey Chickens ...	3/3 to 4/0	3/3 to 4/0	3/3 to 4/0	3/3 to 4/0	Russia	—	—	—
Sussex " "	3/3 " 4/0	3/3 " 4/0	3/3 " 4/0	3/3 " 4/0	Belgium	—	—	—
Boston " "	2/3 " 3/6	2/3 " 3/6	2/3 " 3/6	2/3 " 3/6	France	—	—	—
Essex " "	2/3 " 3/9	2/3 " 3/9	2/3 " 3/9	2/3 " 3/9	United States of America	—	—	—
Capon ...	5/0 " 6/0	5/0 " 6/0	5/0 " 6/0	5/0 " 6/0	Austria	—	—	—
Irish Chickens ...	2/0 " 3/0	2/0 " 3/0	2/0 " 3/0	2/0 " 3/0	Canada	—	—	—
Live Hens.	1/9 " 2/9	1/9 " 2/9	1/9 " 2/9	1/9 " 3/0	Australia	—	—	—
Ducks	—	—	—	—	—	—	—	—
Geese.....per lb.	/9 , /10	/9 , /10	/9 , /10	/9 , /10	—	—	—	—
Turkeys, cocks "	/10 , /11	/10 , /11	/10 , /11	/10 , /11	—	—	—	—
" hens "	/11 , /11	/11 , /11	/10 , /10	/10 , /10	—	—	—	—
Guinea Fowls	—	—	—	—	—	—	—	—

ENGLISH GAME—LONDON MARKETS.

DESCRIPTION.	ENGLISH GAME—LONDON MARKETS.				IRISH EGGS.				IMPORTS OF EGGS.			
	Each.	Each.	Each.	Each.	DESCRIPTION.	1st Week. Per 120.	2nd Week. Per 120.	3rd Week. Per 120.	4th Week. Per 120.	MONTH ENDING DEC. 31, 1913.	MONTH ENDING DECEMBER 31ST, 1913.	
Grouse	—	—	—	—	—	—	—	—	—	—	—	
Partridges	1/9 " 2/3	1/9 " 2/3	1/9 " 2/3	1/9 " 2/3	Partridge	—	—	—	—	Poultry. £3.015 £17	Game. £114.560 £99.898	
Pheasants	2/6 " 3/0	2/6 " 3/0	2/6 " 3/0	2/6 " 3/0	Quail	—	—	—	—	—	£63.115 £44	
Black Game.....	—	—	—	—	Bordeaux Pigeons	—	—	—	—	—	£4.778	
Hares	2/6 " 3/0	2/6 " 3/0	2/3 " 3/0	2/3 " 3/0	Hares	—	—	—	—	—	£327.596	
Rabbits, Tame	—	—	—	—	Rabbit	—	—	—	—	—	—	
," Wild	8/ " 1/0	8/ " 1/0	8/ " 1/0	8/ " 1/0	Snipe	—	—	—	—	—	—	
Pigeons, Tame.....	—	—	—	—	—	—	—	—	—	—	—	
Wild Duck	1/9 " 2/3	1/9 " 2/3	1/6 " 2/3	1/6 " 2/0	—	—	—	—	—	—	—	
Hazel Hens	—	—	—	—	—	—	—	—	—	—	—	
Woodcock.....	1/6 " 2/0	1/6 " 2/0	1/0 " 1/9	1/0 " 1/9	—	—	—	—	—	—	—	
Snipe	9/ " 1/3	9/ " 1/3	1/3 " 1/0	1/3 " 1/0	—	—	—	—	—	—	—	
Plover	9/ " 1/0	9/ " 1/0	1/0 " 1/0	1/0 " 1/0	—	—	—	—	—	—	—	

ENGLISH EGGS (Guaranteed New-Laid).

MARKETS.	ENGLISH EGGS (Guaranteed New-Laid).				FOREIGN EGGS.			
	1st Week. Per 120.	2nd Week. Per 120.	3rd Week. Per 120.	4th Week. Per 120.	1st Week. Per 120.	2nd Week. Per 120.	3rd Week. Per 120.	4th Week. Per 120.
LONDON	18/-	18/-	16/-	16/-	French	14/6 to 17/0	14/6 to 17/0	14/6 to 17/0
Provinces.	Eggs per dozen.	Eggs per dozen.	Eggs per dozen.	Eggs per dozen.	Danish	15/0 " 17/0	15/0 " 17/0	15/0 " 17/0
CARLISLE	2/4	2/0	1/9	1/7	Italian	13/6 " 15/0	13/6 " 15/0	13/6 " 15/0
NEWPORT	1/9	1/9	1/7	1/5	Austrian	9/6 " 10/0	9/6 " 10/0	9/6 " 10/0
					Russian	8/9 " 10/3	8/9 " 10/3	9/3 " 10/6
					Quantities in Gt. Hund.	—	—	—
					Declared Values.	—	—	—
					Russia	1,189,688	1,589,557	1,428,150
					Denmark	102,659	145,944	102,659
					Germany	45,271	26,320	45,271
					Netherlands	19,993	13,401	19,993
					France	59,741	37,010	59,741
					Italy	54,594	26,025	54,594
					Aust.-Hungary	192,882	77,635	192,882
					Other countries	12/0 " 12/0	12/0 " 12/0	12/0 " 12/0
					Totals	2,092,978	1,096,791	2,092,978

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Certified eggs are the latest in American hen cities. There is such a clamour these days for certified milk, ice, meat, butter and all kinds of eatables that poultry raisers have caught up the idea and are advertising and selling certified eggs to their customers. The health of their flocks is passed upon regularly and a certificate given showing their condition of health, and any fowl showing signs of tubercular trouble or other constitutional disease is quickly dispatched and got rid of. Why not certified eggs?

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Mr. Tamlin's Exports.

The following is a list of Mr. W. Tamlin's Exports for December.

The total number of machines sent amount to 120, which are made up as follows:—Fifteen 60, twenty 100, and four 200 Incubators, and twenty 100 Foster Mothers, to Mons. Andre Masson, France, agent for France. Three 100 and three 60 Incubators, and three 100 Foster Mothers, to Mr. H Mascarenhas, agent for Portugal. Three 100 Incubators and three 100 Foster Mothers, to Oakes & Co., Madras. Three 30, eight 60, and five 100 Incubators, ty Hayward, Young & Co., Port Elizabeth, South Africa (agents). Three 60 Incubators and six Kibbling Mills, to Jno. F. Marshall, agent for Johannesburg. One thirty Incubator, to Mr. M. Beh-aeddin, Constantinople. One 30 Incubator, to Algoa Bay, order of Sowden & Stoddart. One 30 Incubator and one 60 Foster Mother, to Mr. Owen, Sydney, Australia. Two 100 Incubators and two 100 Foster Mothers, to Mr. R. Barr, Paraguay, South America. One 100 Foster Mother, to Mr. P. A. Acts, Colombo, Ceylon. One 60 and one 100 Incubators, and one 60 and two 100 Foster Mothers, to Aden, order of Balfour, Williamson & Co. Two 30 Incubators and one 100 Foster Mother, to East Africa, for Mr. W. Walther.

A valuable aid in Egg Production.

"Better poultry and more of it" is the motto taken by an American contemporary, and it gives expression to a sentiment with which all poultry keepers will agree. Although it is true that the number of birds kept in this country could be increased very considerably, it is our opinion that the first point to which attention should be directed is in the direction of improving the fowls that we already possess. We believe that we are correct in stating that in Great Britain there are somewhere about 22,000,000 adult fowls, and if only these could be encouraged to produce a larger number of eggs annually, and a greater portion during the scarcer season of the year, it would go a long way to solve the difficulty of shortage of supplies. For this reason anything that can be introduced that will aid poultry keepers to increase their yield of winter eggs will be readily taken up by those who keep their poultry as a business concern.

The grave danger connected with the use of egg producing foods and substances is that there is a tendency after continued use to do damage to the birds themselves. Anything in the nature of a stimulant is more or less dangerous, and although for the time being it may encourage laying, the final result is often disastrous. Cayenne pepper and kindred substances may prove beneficial for a short while but they quickly lose their efficacy and become harmful.

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Some time ago we had a new poultry spice brought to our notice, and from our own experience and that of others we have come to the conclusion that this special spice, whilst increasing the egg yield enormously, does not carry with it the disadvantage mentioned above. We refer to the "Karswood" poultry spice, manufactured by E. Griffiths Hughes, Ltd.

A test carried out in the winter of 1912-1913, in the Peak district of Derbyshire gives evidence of the value of this spice. One hundred hens and one hundred pullets were picked out haphazard from a large flock, and one half of each were given the spice and the other half were not. The food fed in both instances was the same. The "Karswood" spice fed birds produced eggs to the value of £15/10/0 in excess of those from the fowls which were not given this substance, and this increase was obtained at a cost of 2*4/-*, thus showing a clear profit of £1*4/6*/0.

All poultry-keepers should test the value of this spice for themselves and note results.

A Go-a-head Firm at Reading and Guildford.

We have received a very useful booklet, in the form of a catalogue, from Messrs. Browne & Lilley, Ltd., of Reading and Guildford, who claim, and claim rightly, that they are one of the largest manufacturers of portable wood and iron buildings in the country. The section devoted to the special lines in poultry appliances, is only one of many others, but this department is conducted with the same care for efficiency and good quality as characterises the whole of their business. The rapid development of this firm's business is due to the quality of the goods they turn out and their method of doing business. The poultry houses show some exclusive designs, all of which have been planned by experts to ensure the health of the birds. Ventilation problems have always vexed the makers of poultry houses, but these have been solved by this firm. The material used in the construction of all the numerous appliances is selected with very great care, and this accounts for their good wearing qualities. Two houses that have met with a great and ever-increasing demand are the "Standard" and the "Field." Both of these are mounted on wheels and can be readily moved from place to place. The framework of both is sufficiently heavy to withstand any strain, and yet light enough to render moving an easy matter. A good type of cheaper house is the "Modern," which has had a very large sale, numerous customers sending large repeat orders. Amongst other forms we specially noticed the "Erleigh," "Precision," and "Ideal," all of which are worthy of notice. A useful pen that can be put to a variety of uses is the "Climax." It is built apex in shape and can be used as a fattening pen for cockerels, to house a hen and her brood, or as a between house for larger chickens. Readers should secure a catalogue before the issue is exhausted.

Vinton's Agricultural Almanac and Diary, 1914.

All farmers, landowners, stockowners and breeders will find "Vinton's Agricultural Almanac and Diary, 1914," which is published at 1*s.*, the right volume with which to begin the new year. It is compiled specially for their use, and is packed from cover to cover with all kinds of information which cannot be carried conveniently in the memory, but which is here available in a convenient form when required.

In addition to the mass of statistical and official information, which renders it so helpful as a book of reference, it contains a most convenient diary for the year, where crop and weather notes; foaling, calving, and lambing dates; engagements, and a host of other facts and figures connected with the farmer's business may be recorded. This is printed on exceedingly good paper, showing a week at an opening on two pages, with plenty of room for memoranda. The monthly cash account section at the end for noting income and expenditure should be of the greatest value to the farmer, and by entering moneys paid in and withdrawn he will be able to tell at a glance the state of his banking account and finances generally. The calendar is followed by the breeders' tables, two pages being devoted to each month, forming a handy and useful system of keeping breeding records throughout the year.

Live Stock Journal Almanac, 1914.

THE BREEDER'S ANNUAL.

All that is necessary to be recorded in the world of live stock breeding and showing in the year now closed will be found in the LIVE STOCK JOURNAL ALMANAC for 1914, which has just made its welcome appearance. The volume extends to some 350 pages, it includes about sixty articles by well-known experts, and is beautifully illustrated with some 200 engravings of outstanding prize-winning stock from leading studs, herds and flocks.

The ALMANAC includes lists of Live Stock and Agricultural Societies, Chambers of Agriculture, Agricultural Colleges, Live Stock Statistics, Railway Rates for Live Stock, Weights and Measures, Stamp and Tax Duties, etc. The usual Calendar, Diary, Breeders' Tables (two pages to each month), Breeders' Directory, and List of Fairs and Markets are retained, and the handsome section devoted to Studs, Herds and Flocks Illustrated contains entries from many of the best known owners in the Kingdom, and the facts and illustrations in this department alone make capital reading. Breeders at home and abroad will find in this old-established annual the most complete record published of the live stock of the year. The ALMANAC is sold at 1*s.*, or handsomely bound in cloth 2*s.*, and can be had from booksellers and bookstalls, or from the publishers, Messrs. Vinton and Co., 8, Bream's Buildings, Chancery Lane, London, E.C.

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For Poultry, Ducks, Geese, Turkeys, and Pheasants.

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THE most extraordinary profitable discovery of special interest to everyone who breeds and rears fowls for pleasure or for profit has just been made. It is one whereby anyone may enormously increase the output of eggs from hens—and this not for one week only, at the most prolific season, but for every week in the year, and particularly in winter when eggs fetch the highest price.

The announcement of this discovery is all the more valuable as the statements of the discoverers are supported by the most astounding series of proofs. These proofs are the result of remarkable and independent experiments conducted under particularly adverse conditions.

A Winter Test.

The published figures forming the results of these experiments are authentic and attested. Without fear of contradiction, we may say that the test of which these figures are a faithful record was the most severe to which any Poultry Spice was ever put. It is quite an easy matter for the makers of a Poultry Spice to select a lot of excellent layers, feed them on the very best food, with the addition of Spice, and show as a result an astounding record of eggs laid. But in this test carried out with "Karswood Poultry Spice" there was no selection whatever of the Poultry. The tests were carried out in the worst months of the year upon average pullets and old hens, and extended continuously over a period of 5 months from November, 1912, to March, 1913.

The accompanying table of figures tell a wonderful story how the egg-producing powers of pullets and old hens were enormously increased simply by adding to the morning meal once a day a small quantity of "Karswood Poultry Spice."

It is nothing short of a modern miracle that so simple a course should yield such marvellous results.

Just think of it. A small quantity of "Karswood Poultry Spice" added to the morning meal nearly trebled the egg output during November and December.

Here is the Story.

Here are the whole facts of the experiments:

On the 1st of November last 100 pullets of the same age and breed, and 100 old hens of the same age and breed, were picked out haphazard—good, bad and indifferent—and placed into 4 pens, 2 pens containing 50 pullets each and 2 pens containing 50 old hens each.

The birds in all four pens had precisely the same food, consisting of meals, barley, maize, sharps, bran, peameat, oats, &c., with the usual grit and shell—in short, just the ordinary food given to poultry. But to one lot of 50 pullets and one of 50 old hens, "Karswood Poultry Spice" was added to the morning meal once a day, as directed on the label.

A Five Months' Test.

The conditions were continued daily for five whole months and a complete daily record of the eggs from each pen was carefully kept. The record of the increase in the number of eggs laid by the two lots of poultry fed with the "Karswood Poultry Spice" was simply astounding.

The old hens and pullets, to whom "Karswood Poultry Spice" was given at the

morning meal, laid between them in five months 4,389 eggs. The same number of old hens and pullets, which were not assisted by "Karswood Poultry Spice," laid between them only 2,452 eggs in the same period.

The egg increase from using "Karswood Poultry Spice" was thus 1937 eggs, which sold at the prevailing average market price, gave a magnificent gross profit of £15 10s. 0d., as against 24s., the cost of the spice used.

This prolonged test gives overwhelming evidence of the splendid qualities of "Karswood Poultry Spice," taking place as it did in the bleak, cold and windy Peak District of Derbyshire, during the worst-weather months of the year.

The most extraordinary part of this test is the fact that, in spite of the marvellously prolific output of eggs, the pullets and old hens—aided by the Karswood Spice—were, in every other way, in superior condition.

Monthly Figures

(day to day figures supplied on application)

Eggs laid from Nov. to March

with and without

KARSWOOD POULTRY SPICE.

	Pullets.		Old Hens.	
	with	without	with	without
November ..	230	72	177	53
December ..	459	194	320	155
January ..	441	215	258	134
February ..	563	338	362	231
March ..	931	586	648	474
TOTALS ..	2624	1405	1765	1047
Total Eggs with Karswood Spice	4389			
Total Eggs without Karswood Spice	2452			
Increase by using Karswood Poultry Spice |	1937			
During the period eggs varied in price from 4 a shilling to 10 a shilling.				
1937 eggs actually sold for ..	£15 10 0			
Cost of Karswood Poultry Spice used was ..	1 4 0			
Clear Profit by using Karswood Poultry Spice |	£14 6 0			

While the 100 birds not fed with "Karswood Poultry Spice" were suffering badly from the inclement weather, the other 100, thanks to the daily tiny quantity of "Karswood Poultry Spice," were in the pink of condition—"tight feather" and excellent in every other way—and were laying eggs in much larger numbers. The contrast in the condition of the two lots of poultry was so astounding as to be noticeable to the most casual and inexpert observer.

Larger Eggs, too.

Moreover, the contrast in the size and quality of the eggs was no less noticeable than in the poultry themselves. "Karswood Poultry Spice" is invaluable as an egg producer. It does not force the birds, therefore there is no deleterious effect as with cayenne and other condiments. "Karswood Poultry Spice" is guaranteed to contain no cayenne or other injurious ingredient. "Karswood" is a pure spice which

stimulates the natural development of the egg cluster, and the eggs resulting from its use are larger, richer in flavour, and much more fertile.

One tablespoonful is sufficient for 20 hens per day. A shilling packet is ample for 20 hens for a whole month. The cost of the spice is thus but a trifle, and the value of the increased egg output is about 13 times the cost of the spice used. "Karswood Poultry Spice" is thus the first aid a poultry-keeper can employ. In fact no one can afford to be without this wonderful egg-producing product. Very often "Karswood Poultry Spice" makes all the difference between keeping your fowls at a loss and their making you a profit.

A Wonderful Opportunity for Poultry-Keepers.

The discovery of "Karswood Poultry Spice" is destined to work a complete revolution in the sale of eggs in British markets.

During 1912, according to Board of Trade returns, eggs to the total value of £8,000,000 sterling were imported into the United Kingdom from abroad.

With such a wonderful egg-producing product as "Karswood Poultry Spice," what is to prevent British poultry-keepers from transferring every penny of that sum to their own pockets by introducing into the English markets, fine, large, rich-flavoured eggs from their own farms—eggs which can, under the new conditions, brought about by "Karswood Poultry Spice," be produced with abounding profit.

Birds for the Table.

"Karswood Poultry Spice" saves weeks of time in feeding chickens for the table. Test this for yourself by dividing your chickens into two lots. Give them all the same food, but to one lot give the spice according to directions, and watch the results. The chickens treated with the spice will be ready for the table long before the others.

Send for a sample

For 6d. (P.O. or stamps) we will send you, postage paid, sufficient spice for 20 hens for 16 days. For Colonies and foreign countries extra postage must be remitted with order.

Please write the envelope clearly to the address below.

Be careful to write your name and address clearly, and we should be obliged if you would tell us the name of your local dealer—either Chemist, Grocer, or Seedsmen, from whom you would like to obtain supplies in future. You will certainly want more.

Note the Economy.

A 2d. packet will supply 12 hens for 7 days.
A 6d. packet will supply 20 hens for 16 days.
A 1/- packet will supply 20 hens for 32 days.
A 7-lb. tin will supply 140 hens for 32 days.
A 14-lb. tin will supply 280 hens for 32 days.
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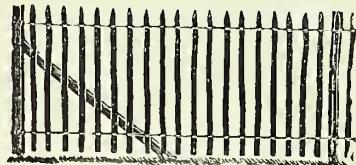
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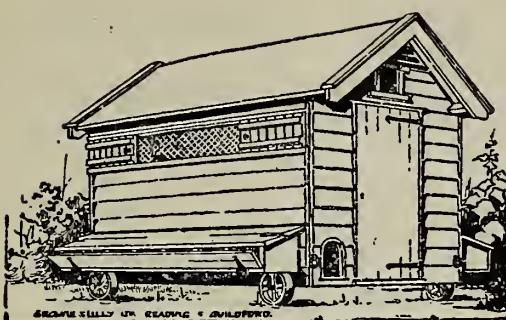
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